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*Summer
Sessions 1961*

UNIVERSITY OF MASSACHUSETTS BULLETIN

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V153

1961

The University of Massachusetts is the Land-Grant University of the Commonwealth, its primary purpose being to serve the people and the interests of the State and the Nation.

Summer Session Highlights

CONCENTRATED TEACHER TRAINING PROGRAM
FOR LIBERAL ARTS AND SCIENCE GRADUATES

JOB RELATED COURSES AND WORK CONFERENCES
FOR PROFESSIONAL GRADUATE NURSES

WORKSHOP AND SEMINARS IN EDUCATION

INSTITUTE FOR FOREIGN-LANGUAGE TEACHERS

COURSES IN ENGINEERING, FORESTRY, AND NURSING

PROGRAM FOR STUDENTS GRADUATING FROM HIGH SCHOOL IN JUNE, 1961

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HUGH MONTGOMERY, B.S., B.S. IN L.S.	<i>Librarian</i>

CALENDAR FOR THE TWO SUMMER TERMS

TERM	REGISTRATION DATE	PLACE	TIME	CLASSES BEGIN	CLASSES END
1st	June 26	Student Union Bldg.	8 a.m. to 12 noon	1 p.m.* June 26	1 p.m. July 27
2nd	July 31	Student Union Bldg.	8 a.m. to 12 noon	1 p.m.* July 31	1 p.m. Aug. 30

Monday, July 4, Independence Day. No exercises. Classes will be held on these Saturdays: July 1, July 8.

Classes are also scheduled for these Saturdays: August 5, August 26, during the second main summer term.

*On June 26 and July 31, classes scheduled for the 1st morning period will meet from 1-1:50 p.m., 2nd morning period will meet from 2-2:50 p.m., 3rd morning period will meet from 3-3:50 p.m., afternoon period will meet from 4-4:50 p.m.

Registration for other summer courses at Registrar's Office, South College, on the first day of the session.

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General Information

The University of Massachusetts is the state university of the Commonwealth, founded in 1863 under provisions of the Morrill Land Grant Act passed by the United States Congress one year earlier.

Presently preparing for the observance of its Centennial, the University is a member of the great community of Land Grant colleges and state universities serving the nation as principal resources of higher education for the country's citizenry. Incorporated as the Massachusetts Agricultural College in April, 1863, the institution was formally opened to a handful of students in 1867. Rooted in the liberal arts tradition (its early presidents were graduates of such colleges as Dartmouth, Williams, Amherst, and Harvard), it has grown steadily from the four teachers and four wooden structures available for its opening session. Reflecting the broadening interests of its students, the General Court of Massachusetts authorized a second name, Massachusetts State College, in April, 1931. Sixteen years later, in May, 1947, the institution became the University of Massachusetts.

Situated in one of the most picturesque sections of the state, the University joins with its academic neighbors—Amherst, Smith, and Mount Holyoke Colleges—in maintaining the rich tradition of educational and cultural activity associated with this Connecticut Valley region. The University's central campus consists of approximately 700 acres of land and 80 buildings. Physical growth has been carefully planned, with provisions for additional buildings and facilities to accommodate an enrollment of approximately 10,000 students within the next decade. Offering a comprehensive program of instruction and research, the University is thus the Commonwealth's major resource of public higher education dedicated to the preservation and continued development of the country's free institutions.

UNIVERSITY OF MASSACHUSETTS

SUMMER SESSIONS

1961

FIRST SUMMER TERM.....	JUNE 26 — JULY 29
SECOND SUMMER TERM.....	JULY 31 — SEPTEMBER 1
SPECIAL COURSES.....	JUNE 6 — SEPTEMBER 8

PROGRAMS OFFERED

Entering Freshmen

The University of Massachusetts is inviting well-qualified high school graduates to begin their college education immediately after June 1961 graduation. In view of the rising enrollment pressures on University facilities, the University believes that for certain students, a summer program of studies might be helpful. For the good student who, perhaps, is already convinced his formal education will require graduate and professional studies after his undergraduate work, an early start may save him valuable time.

The full facilities of the University of Massachusetts—its professional teaching staff, classrooms, libraries, laboratories, dining rooms and dormitories—will be available this summer for two summer terms from June 26 to July 29 and from July 31 through September 1.

June graduates of high schools, certified for college work, may begin required freshman courses including those in English, languages, natural and social sciences. This program should be especially attractive to young men who face military commitments, those interested in eventually entering graduate school, and others who wish to complete their college work in less than four years.

Special Certification Program for Teachers

The School of Education is continuing its program of preparation for teacher certification for undergraduates and graduates of colleges of liberal arts and science who wish to teach in either elementary or secondary schools and who find it difficult to take courses during the regular university year. The program includes four professional courses during the summer session and student teaching in public schools during the fall. In certain cases in emergency fields such as elementary education, foreign languages, mathematics, and sciences it may be possible to arrange a year's internship with full pay in a public school in place of student teaching. This program meets certification requirements in Massachusetts and several other states and admits to temporary certification in several others. The program is well suited to married women who can be away from home during the day in July and August, as frequently the student teaching can be done in the student's home town.

For a detailed description of the various Certification Programs and for application materials the candidate should write to the Dean, School of Education, Machmer Hall, University of Massachusetts, Amherst. To insure accurate appraisal of the application the materials should be completed and returned as far in advance of June 1, 1961 as possible. In case of over-enrollment the ap-

plicants will be chosen in the order of their application and acceptance. Applicants for the full program of courses and student teaching will have priority in the courses. A few student places in the certification courses may remain for other qualified students who wish to take one or more courses for professional improvement or to complete certification requirements.

The School of Education is offering also its usual broad program of graduate courses for teachers, administrators, and other school personnel leading toward a graduate degree or for professional improvement. Application for these courses should be made by completing the graduate form at the back of this bulletin and sending it to the Graduate Office.

Institute for Advanced Studies in French

The Department of Romance Languages of the University of Massachusetts will offer during the first summer session (June 26 to July 29) its second annual Institute for Advanced Studies in French. Special graduate level courses will be offered in Contemporary French Literature and in Methods and Techniques of the Language Laboratory. The work will be offered by Specialists in these fields with specific attention to the needs and interests of the participants.

A feature of the program will be methods and techniques of the Language Laboratory, a course which will be valuable to all teachers of foreign languages. Additional features will include a program of films, special lectures and exhibits and full opportunity to use and become thoroughly familiar with the recently completed 80-position language laboratory. Consultants will be available to advise on the selection and use of materials and equipment in the Language Laboratory especially at the high school level. Tapes, discs and an extensive collection of A-V equipment will be available for use, demonstration and experimentation.

Other Courses

Three courses taking advantage of the location of the University in the Connecticut Valley will also be offered. These courses will include field work and observation as basic parts of their programs. A course on the flora of New England (Botany 26) and the basic course (Botany 1) will have the surrounding area as a laboratory. A course on the behavioral pattern of birds (Zoology 80, Ornithology), with emphasis given to their structural and functional adaptations will be offered. Two courses in Music (Music 29, Introduction to Music; and Music 54, Historical Survey of Music) are being offered by the Department of Music during the two summer terms, non-technical courses designed for students desiring a general background and knowledge of this art and for Music majors. Six courses will be given in Art: Art 33 and 34, Basic and Advanced Drawing; Art 51 and 52, Watercolor, with emphasis placed upon a study of techniques peculiar to watercolor design and representation; and Art 57 and 58, Printmaking.

Special courses in Engineering (Chemical, Civil, Electrical and Mechanical) Forestry, and Nursing will also be offered.

Credit for Summer Work

All courses carry degree credit and are equivalent in method, content, and credit to courses offered in the University during the regular academic year. Credits obtained in these courses are ordinarily accepted as transfer credits by other colleges and universities. Students desiring to pursue courses for the advanced degrees must seek the approval of the Dean of the Graduate School.

Thesis and Special Problems Credit

Graduate students contemplating special problems course work and thesis work during the summer session should seek the permission of their Department Heads and/or advisers and get approval from the Dean of the Graduate School. Such programs, although not listed by title and number in the summer session bulletin, are available by many departments on campus during the summer session.

Study Load

Students attending either summer term usually carry two courses, enabling them to earn six or seven semester hours credit. University of Massachusetts undergraduates will receive permission to take more than two courses only if their scholastic average has been 3.0 quality point or better for the last two semesters. A student from another college can enroll for more than two courses only if the appropriate official of his own college submits a statement recommending such a program and certifying that he is an honor student at that institution.

Expenses (For each summer term)

Tuition for residents of Massachusetts . . .	\$10.00 per credit hour
Tuition for non-residents of Massachusetts . .	15.00 per credit hour
Student Health and Activities Fee . . .	2.00
Student Union Fee	5.00
Room rent	32.00
Board fee (5-day meal ticket)	51.25

Advance Enrollment (Undergraduate and Graduate Students)

To expedite advance enrollment, or to obtain approval of admission, undergraduate students contemplating attendance should notify the Registrar as soon as possible, using the application form on page 35 of this bulletin. Graduate students must use the application form on page 36 of this bulletin. Graduate students must receive approval for admission from the Dean of the Graduate School. Payment of fees and other costs prior to the registration date is strongly advised to insure enrollment in certain courses offered.

Residents

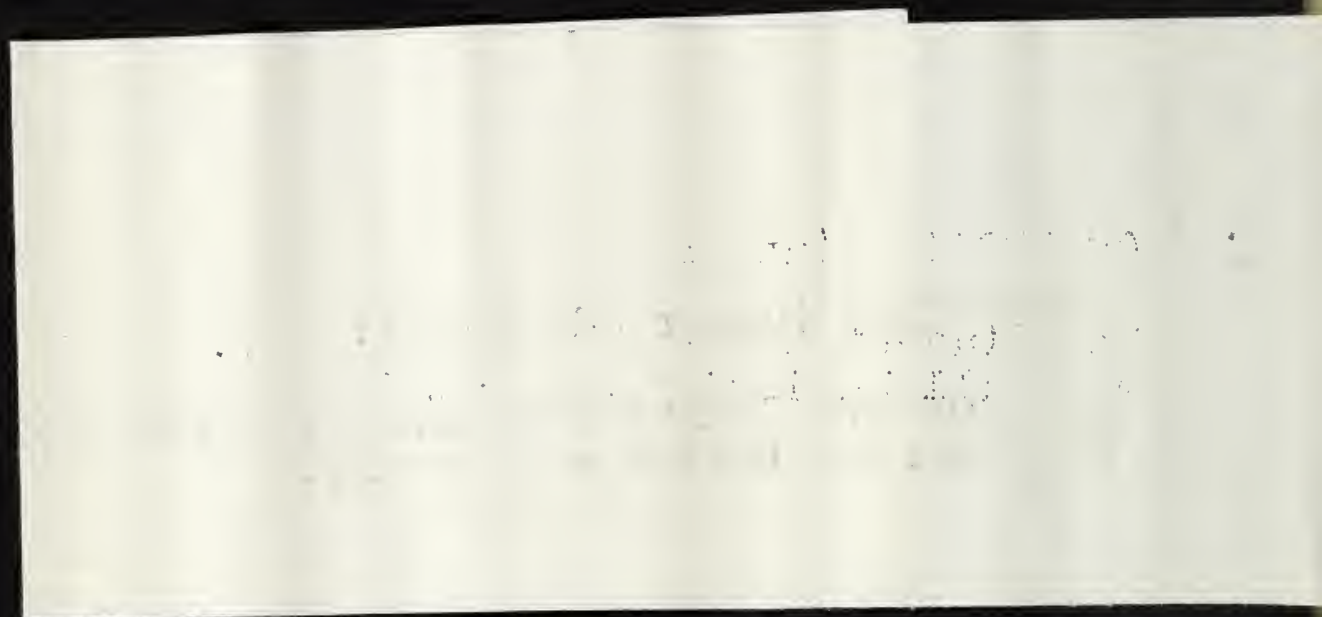
New students who are residents of Massachusetts must file certificate of residence with the Treasurer's Office in order to obtain the residential tuition rate (see page 37 of bulletin for form to be filled out).

Veterans

Veterans who plan to enroll under the G. I. Bill (P. L. 550) should present—not later than the time of registration—evidence of eligibility or make application for training at that time. Students already enrolled under P. L. 550 should re-enroll for Summer Session work. Under this law, veterans receive an education and training allowance from the Veterans Administration from which they pay their own university fees and purchase their own books and supplies. Students should see Mr. George Emery, South College, for further information on this program.

CORRECTION (under Expenses):

The Student Health Fee will be „1.00 a week, and the Activities Fee will be levied separately.



SERVICES AND RECREATION

During Summer Session the facilities of the University are at the disposal of students. In addition to the classrooms, the laboratories, and library facilities available for student use, a number of other agencies and services are offered.

University Health Service

Medical consultation and treatment is available to students at the University infirmary. The infirmary, located east of the Dining Commons, furnishes ordinary medical care for students.

Placement Service Loans

Three types of loans are available to students—University short term loans, Massachusetts Higher Education Loans, and National Defense Student Loans. Students should see Mr. Emory Grayson, Director of Placement, South College, for information on these programs.

Part-Time Student Employment

Campus part-time jobs are available for a limited number of students. Students seeking employment should see Mr. Robert Morrissey, Placement Officer for Men, and Mrs. Anne Tanner, Placement Officer for Women. Their offices are located in South College.

Residence Halls and Meals

Assignment of rooms in University residence dormitories is made on the term basis with room payment due not later than the beginning of the term. The Summer Session residence period is from June 26 to July 29 (12 noon) and July 31 to September 1 in most cases (two summer terms). Students are also accommodated for periods before and after the summer terms. Men and women will be housed in University dormitories. Meals will be provided to students at the Dining Commons during the two terms only. Students residing in residence dormitories during these periods of time are required by University regulations to take their meals in the University Dining Commons. Meal tickets, on a five-day basis (Monday through Friday), may be secured at the Dining Commons after payment of the bill at the Treasurer's Office. Cafeteria service will be available in the coffee shop of the Student Union Building during all sessions for other students desiring food service. Married students should write to the Housing Office at the University regarding housing accommodations.

Recreation and Entertainment

In planning for its students, the importance of recreation, entertainment, and relaxation are recognized. The natural environment in which the University is located affords almost unlimited facilities for combining recreation activities with academic and professional achievement. Indoor and outdoor extracurricular activities designed to meet varying interests of individuals are planned. Such features as band concerts, movies, and square dances will be scheduled. In addition, programs for recreation offering many informal sports such as swimming, softball, baseball, tennis and hiking will be arranged. Special lectures, a trip to the Berkshire Music Festival at Tanglewood and a play at Mountain Park will also be provided. A get-acquainted picnic will be scheduled during each summer term. A golf course, located within five minutes driving

time from the University campus, is available to students upon payment of green fees.

The Student Union Building, a center of student activity and social life, serves as a recreational center and common meeting place for students. Attractively furnished, the Union includes lounges, music listening rooms, reading rooms, game and recreation rooms, bowling alleys, ballroom, and a coffee shop.

A Student Activities Office and staff in the Student Union plan and execute the social and recreational programs.

COURSE DIRECTORY

The University reserves, for itself and its departments, the right to withdraw or change the announcements made in this catalogue.

Courses numbered 1-99 carry undergraduate credit only. Those numbered 100-149 and 200 or over admit graduate students only. Courses numbered 150-199 are undergraduate courses for which graduate students may receive graduate credit with the completion of additional requirements as determined by the instructor. The numbers in parentheses indicate credit value of the courses.

The timetable of summer classes, listing the times and places of class meetings and names of instructors for the two summer terms, begins on page 27 of this bulletin.

FIRST SUMMER TERM

(JUNE 26 — JULY 29)

AGRICULTURAL ENGINEERING 200. Special Problems.

AGRICULTURAL ENGINEERING 300. Thesis, Master's Degree.

ANTHROPOLOGY 63, 163. Social Anthropology (3). An introduction to the fields of anthropology: human evolution and race; prehistory; variations among societies in kinship, economic, political and religious organizations. 3 class hours. Prerequisite, Sociology 25.

ANTHROPOLOGY 67, 167. Ethnology of Africa (3). A limited consideration of the history, physical types, social organization and culture of Africa south of the Sahara with special consideration of several diverse cultures. Prerequisite, Sociology 25.

ART 33. Basic Drawing (3). Introduction to drawing in black and white, applying pencil, crayon, charcoal techniques to representation in line and tone, emphasizing sound observation and effective presentation.

ART 57. Printmaking (3). Basic study of materials, techniques, aesthetic considerations peculiar to graphic media of lithography and intaglio (etching, aquatint, etc.), permitting students to print their own work. Prerequisites, Art 31 (Basic Design), Art 34, or permission of the instructor.

ART 58. Printmaking. Continuation of Art 57. Prerequisite, Art 57.

BACTERIOLOGY 31. Introductory Bacteriology (4). An introduction to the bacteria and sub-microscopic organisms, their place in the general field of biology, and their importance in world industry, economics and health.

BOTANY 1. Introductory Botany (3). The morphology and physiology of plants.

BOTANY 26. New England Flora (3). Identification of tracheate plants (lycophods, horsetails, ferns, gymnosperms, angiosperms) and the families they represent. Prerequisites, Botany 1, Botany 25 recommended.

Business Administration

ACCOUNTING 25. Introduction to Accounting (3). An introduction to the principles underlying the collection, recording, and interpretation of accounting data.

FINANCE 65. Corporation Finance (3). Social significance of corporate financial behavior. Internal administration and control. Expansion, capital-readjustment, and social control. Prerequisite, Accounting 25, or consent of instructor.

GENERAL BUSINESS 71. Business Law I (3). The law of contracts and sales.

MANAGEMENT 61. Principles of Management (3). The basic introductory course dealing with the fundamental principles and the practices of the managerial process in business enterprise.

MANAGEMENT 64. Personnel Management (3). The principles and policies followed by management in the procurement, development, direction and control of personnel.

MARKETING 53. Marketing Principles (3). A survey of the problems involved in the distribution of industrial and consumer goods including wholesaling, retailing, and sales promotional activities.

MARKETING 62. Marketing Research (3). The aims, sources and fact-gathering methods of marketing research activities. Individual case study and research projects.

CHEMISTRY 1. General Chemistry (3). A study of the fundamental chemical laws and theories, with the object of giving the student a sound scientific training through a course in chemistry.

CHEMISTRY 29. Qualitative Analysis (4). Systematic semi-micro analysis in a study of the principles and laws of the behavior of solutions of electrolytes. Prerequisites, Chemistry 2 or 4 (or equivalent).

CHEMISTRY 51, 151. Organic Chemistry (4). A survey of the properties, preparation and reactions of the important classes of aliphatic and aromatic compounds. Prerequisite, a course in qualitative or quantitative analysis.

CHEMISTRY 65, 165. Physical Chemistry (3). A study of the fundamental theories and laws of physical chemistry, together with the solution of problems involved in their application. Prerequisites, Chemistry 32 or 27 (Quantitative Analysis); Mathematics 30; Physics 26.

CIVIL ENGINEERING 34. Statics (3). Topics considered: resultant of force systems, equilibrium of forces using algebraic and graphical methods; friction, first and second moments, center of gravity. Virtual work for solving equilibrium problems. Prerequisite, Integral Calculus.

ECONOMICS 25. Elements of Economics (3). Definitions and introductory principles of production, exchange, and the financial organization of society, with a short survey of the economics of distribution and the use of wealth and income.

ECONOMICS 56, 156. Business Fluctuations and Forecasting (3). A study of business fluctuations and an analysis of current business cycle theories. Prerequisites, Economics 25, 53 (Money, Bank & Credit), or Finance 55 (Financial Institutions).

ECONOMICS 83, 183. Social Control of Business (3). Methods of social control of economic activity including both formal and informal controls. The efforts to maintain, supplement, and moderate competition, and the substitution of regulation or public enterprise for competition. Prerequisite, Economics 25.

ECONOMICS 95, 195. Seminar (1-3). Research in economic theory; problems of labor, commerce, and industry. If desirable, some other economic study may be substituted. Prerequisites, Economics 25 and 26.

EDUCATION 51, 151. History of Education (3). Educational movements are traced from early Greece to the present with the aim of better understanding of modern problems.

EDUCATION 62, 162. Elementary School Arithmetic (3). Methods and materials in teaching arithmetic in elementary grades will be studied and demonstrated.

EDUCATION 64, 164. Principles of Elementary Education (3). The aims, organization, program and pupil population of the elementary school and the relationship between elementary and secondary schools are the areas of concentration.

EDUCATION 72, 172. Vocational Education in Agriculture (3). A survey of vocational agricultural education and an introduction to teaching of vocational agriculture at the secondary level. Admission by permission of instructor.

EDUCATION 75, 175. Techniques of Teaching Vocational Agriculture (3). The materials, methods, policies, and special requirements of Massachusetts for teaching vocational agriculture and related subjects in high schools and in special county agricultural schools. Prerequisite, Education 72, or permission of the instructor.

EDUCATION 77, 177. Principles of School Guidance (3). The need for guidance in the schools, the nature of guidance, and an overview of an adequate guidance service for a school system.

EDUCATION 130. Elementary School Science (3). Methods and new materials of instruction.

EDUCATION 210. Administering Extra-Curricular Activities (3). Scheduling, financing, sponsorship, regulation of pupil participation. Prerequisite, teaching experience.

EDUCATION 211. Community Relations for School Personnel (3). The development of good public relations policies and the techniques of assisting lay people in interpreting school activities, policies, and objectives.

EDUCATION 216. Seminar on the Gifted Pupil (3). An exploration of various methods of giving enriched academic experiences to the gifted in public schools. Prerequisite, teaching experience.

EDUCATION 230. Comparative Education (3). Studies of contemporary systems of education in foreign countries. Prerequisite, Education 151.

EDUCATION 231. Contemporary Problems in Education (3). An intensive examination of several major issues confronting American education today. Evaluation, and criticism of proposals being offered for their solution.

EDUCATION 241. Administration of School Guidance (3). Operative framework of guidance programs in terms of personnel, functions, physical facilities, institutional integration, finance, and laws. Prerequisites, Education 77 and permission of the instructor.

ENGLISH 1. English Composition (2). Practice in exposition for college and professional use reinforced by adult readings and an introduction to literary criticism.

ENGLISH 25. Masterpieces of Western Literature (3). An analysis of selected masterpieces designed to enrich the student's appreciation of literary values and to sharpen his understanding of abiding human issues.

ENGLISH 56, 156. American Poetry (3). American poetry from 1800 to the emergence of a modern style early in the twentieth century.

ENGLISH 67, 167. Shakespeare (3). The dramatic art of Shakespeare as revealed in a study of approximately twenty plays.

ENGLISH 79, 179. The Romantic Poets (3). A study of the Romantic Movement as revealed in the poetry and prose of Wordsworth, Coleridge, and the other early Romantics.

ENGLISH 83, 183. The Development of the English Novel (3). The reading and discussion of eight or nine great English novels from Defoe through the Victorians.

ENGLISH 84, 184. Victorian Poetry (3). An exploration of the range and diversity of Victorian poetry, with special attention to Tennyson, Browning, Arnold, and the Pre-Raphaelite Movement.

ENGLISH 203. Middle English (3). The language of Chaucer and the medieval romances. This (or 201) required of all English majors.

FRENCH 7. Intermediate French; French Life and Culture (3). Selected readings from representative French literary works and a thorough review and study of grammar. Composition, intensive oral practice. Prerequisite, French 2 (Elementary).

FRENCH. Graduate Reading Course (No credit). For graduate students wishing to prepare for the graduate reading examination.

FRENCH 53, 153. The French Theatre of the Twentieth Century (3). A critical study of the French theatre from Scribe to the present.

ROMANCE LANGUAGES 215. Seminar in French (2-3). Comprehensive training leading to the now requisite oral mastery of French, to correct grammatical techniques and analyses, to accurate explication de texte, to linguistics and to present-day pedagogical procedures.

GEOLOGY 97. Special Problems. For seniors specializing in geology. Total credit may not exceed 6. Prerequisite, 21 hours of geology or permission of department.

GEOLOGY 200. Special Problems. Either or both of the following options may be selected:

A. Independent study—guided reading and/or laboratory study in subjects or techniques not covered by other courses in the department.

B. Research—original library, field and/or laboratory investigation of a selected problem.

Prerequisites, 45 credits in geology and consent of department head and of instructor concerned.

GEOLOGY 300. Thesis, Master's Degree.

GERMAN 1. Elementary German (3). Conversation, reading, grammar, and composition. No degree-credit granted until the completion of German 2, except upon special approval by the Provost.

GERMAN. Graduate Reading Course (No credit). For graduate students wishing to prepare for the graduate reading examination.

GOVERNMENT 25. American Government (3). A study of the principles, machinery, dynamics and problems of American national government.

GOVERNMENT 26. European Government (3). A study of the politics and governmental institutions of Great Britain, France, U.S.S.R., and other European countries.

GOVERNMENT 63, 163. Political Parties and Elections (3). A study of the American political process, with emphasis on parties, pressure groups, and public opinion.

GOVERNMENT 65, 165. Constitutional Law (3). An historical study of the United States Constitution as interpreted by decisions of the Supreme Court.

GOVERNMENT 95, 195. Seminar (3). A study of special problems in the field of government.

HISTORY 5. Modern European Civilization (3). The historical development of the western European countries, their ideas and institutions.

HISTORY 25. The Development of American Civilization (3). A survey of the American national growth.

HISTORY 70, 170. Europe Since 1918 (3). Major developments in the internal and international affairs of the European states since World War I.

HISTORY 77, 177. Modern Britain (3). A study of selected topics on the political, social, and intellectual development of Britain in the nineteenth and twentieth centuries.

HISTORY 82, 182. Diplomatic History of the United States (3). The development of American foreign relations, 1900 to the present. Prerequisites, History 25, 26, or permission of the instructor.

HISTORY 83, 183. The Progressive Age, 1900-1920 (3). A study of the political response to the changing economic and social conditions in American life.

MATHEMATICS 1. Introductory Mathematics I (3). Basic set-theoretic and axiomatic concepts, number systems and equations. A study of elementary functions, algebraically and by the methods of analytic geometry.

MATHEMATICS 29. Calculus (3). Further basic ideas and methods of analytic geometry and calculus. Prerequisite, Mathematics 4.

MUSIC 13. Applied Music (1). Advanced study of literature and instrumental technique or voice production. 7½ hours or its equivalent. Prerequisite, intermediate level of proficiency as determined by examination.

MUSIC 23. Vocal Ensemble (½). Preparation of various choral works to concert standard. Additional opportunities for instrumental accompanists and vocal soloists. Admission by permission of instructor.

MUSIC 29. Music Appreciation—Introduction to Music (3). Rhythm, melody, harmony, tone quality, and other music materials. Form, music history. Listening to typical works by great composers. No previous training required.

PHILOSOPHY 31. Introduction to Logic and Scientific Method (3). An inquiry into the nature of critical thinking, with special emphasis on (1) the functions of language, (2) the structure of deductive arguments, (3) the nature of inductive reasoning and its application to scientific method.

PHILOSOPHY 72, 172. Philosophy of Science (3). A critical analysis of the structure of scientific method and the language of science, the respective roles of induction and deduction in science, and the status of theoretical terms.

PHYSICAL EDUCATION FOR MEN 1, 2, 3, 4. Physical Education (2). Aim of the course is to inculcate in the student an adequate knowledge of, a sufficient technique in, and a wholesome attitude toward physical education activities through the medium of individual, dual, and team sports.

PHYSICAL EDUCATION FOR MEN 31, 32, 33, 34. Physical Education (2). A continuation of Physical Education 1, 2, 3, and 4.

PHYSICAL EDUCATION 53, 153. Physical Education in Elementary and Secondary Schools (3). Modern methods and materials of teaching physical education in elementary and secondary schools.

PHYSICAL EDUCATION 80, 180. Driver Education Instructor Course (3). Driver education and driver training at the instructor's level. Leads to certification as instructor in driver education and driver training.

PHYSICS 25. Introductory Physics (4). Mechanics, sound, heat, light. Prerequisite, Mathematics 4.

PHYSICS 85, 185. Modern Physics. Twentieth-century physics, devoted principally to atomic aspects. Prerequisites, Physics 52 and six other credits in junior-senior physics.

PSYCHOLOGY 26. General Psychology (3). An introduction to the principles and study of behavior. Topics considered include development of behavior, sensation, learning, thinking, motivation, intelligence, attitudes, and personality.

PSYCHOLOGY 56, 156. Educational Psychology (3). Psychological principles and facts fundamental to educational situations. Major areas studied are: learner, learning, adjustment, guidance, teacher, teaching methods, evaluation and measurement. Prerequisite, Psychology 26 or 27.

PSYCHOLOGY 65, 165. Child Psychology (3). The psychological development of the child including maturation and development of behavior, language, emotions, intelligence, social behavior, motivation and personality. Nursery school observation and practice. Prerequisite, Psychology 26 or 27.

PSYCHOLOGY 83, 183. Abnormal Psychology. The etiology, symptoms and therapy of behavior abnormalities including the neuroses, psychoses, epilepsies, speech disorders and mental deficiency. Hospital trips and clinics. Prerequisite, Psychology 26 or 27.

PSYCHOLOGY 283. Practicum (3). Practice in the application of psychological techniques to the following areas of psychology: child, clinical, guidance and counseling, industrial, and social.

PUBLIC HEALTH 61. General and Community Sanitation (3). The influence of health measures on community welfare with emphasis on all phases of environmental health.

RUSSIAN 1. Elementary Russian (3). Grammar, exercises in composition and conversation, selected readings. No degree-credit granted until the completion of Russian 2, except upon special approval by the Provost. Prerequisite, previous language training.

RUSSIAN 5. Intermediate Russian (3). A review of the fundamentals of grammar followed by more advanced study of grammatical structure and idiom. Composition, conversation and readings in Russian fiction. Prerequisites, Russian 1 and 2.

SOCIOLOGY 25. Introduction to Sociology (3). A study of the social order, and of the individual considered as a member of his various groups.

SOCIOLOGY 51, 151. Urban Sociology (3). A study of urban American social conditions with reference to population, ecology, health, and the classically defined institutional complexes and their problems of adjustment. Prerequisite, Sociology 25.

SOCIOLOGY 56, 156. Race Relations (3). The social, economic and political aspects of racial and ethnic problems in the United States, plus briefer consideration of similar problems in Africa and Asia. Prerequisite, Sociology 25.

SOCIOLOGY 57, 157. The Family (3). The development of the customs of courtship and marriage of the contemporary American family. The basic causes of changes and trends of the family. Prerequisite, Sociology 25.

SOCIOLOGY 75, 175. Social Problems (3). A consideration of the incidence, distribution and interrelations among the major types of social tensions in human societies. Various theories of causation. Research projects and field trips are required. Prerequisite, Sociology 25.

SOCIOLOGY 214. Criminology (3). Criminological theories, past and present with special emphasis on present research trends as they relate to theoretical formulations. Prerequisites, Sociology 78 or equivalent and permission of instructor.

SPANISH 1. Elementary Spanish (3). For students with no previous training in Spanish. Intensive practice in the language skills. No degree-credit granted until the completion of Spanish 2, except upon special approval by the Provost.

SPEECH 84, 184. Audiology (3). A study of the symptoms and causes of hearing loss; special attention to diagnostic test procedures. Supervised practice in audiometric testing. Observation; field trips. Prerequisite, Speech 85.

SPEECH 85, 185. Introduction to Speech Pathology (3). A study of the causes, functional and organic, of speech problems among children and adults; principles of diagnosis and therapy. Observation; field trips. Prerequisite, Psychology 26.

STATISTICS 77, 177. Elementary Experimental Statistics (3). Covers basic concepts and techniques for determining reliability and significance of small samples. Confidence limits: X^2 , t , and F tests, and simple regression and correlation.

STATISTICS 79, 179. Elementary Economic Statistics (3). Covers charting, tables, frequency distribution, central tendency, dispersion, basic concepts of reliability and significance of small samples, index numbers, simple regression and correlation and time series analysis.

ZOOLOGY 80. Ornithology (3). An introduction to avian biology emphasizing the correlation of structure, function and behavior; identification. Prerequisite, Zoology 1.

SECOND SUMMER TERM

(JULY 31 — SEPTEMBER 1)

AGRICULTURAL ENGINEERING 200. Special Problems.

AGRICULTURAL ENGINEERING 300. Thesis, Master's Degree.

ART 34. Advanced Drawing (3). Continuation of Art 33. Investigation of creative possibilities of pen and ink, brush, and other black and white techniques. Prerequisite, Art 33.

ART 51. Water Color (3). Initial concentration on transparent water color, emphasizing control of techniques and mastery of color relationships. Further experience with opaque water color, such as gouache, casein. Prerequisites, Art 31 (Basic Design) and Art 33.

ART 52. Water Color (3). Continuation of Art 51. Prerequisite, Art 51.

BOTANY 25. The Plant Kingdom (3). A general survey of the morphology, reproduction, distribution and importance of the slime molds, bacteria, algae, fungi, lichens, liverworts, mosses, ferns and seed plants. Prerequisite, Botany 1.

Business Administration

ACCOUNTING 26. Introduction to Accounting (3). A continuation of Accounting 25 with major emphasis on accounting for corporations, partnerships and manufacturers. Prerequisite, Accounting 25.

ACCOUNTING 73, 173. Federal Income Tax Procedures (3). A study of federal income tax laws and regulations as they affect individuals; the preparation of tax returns. Prerequisite, Accounting 26.

FINANCE 75. Principles of Insurance (3). Risks encountered by individuals and business firms and the methods and institutions which have been established to insure against financial losses. The various forms of insurance are studied primarily from the buyers' point of view.

MANAGEMENT 81. Theory of Business Administration (3). The philosophy and theoretical context of administration, corporate objectives, standards, ethics, plans, policies, responsibility, authority, line-staff relations, communications and morale. Prerequisite, Management 61.

MARKETING 54. Salesmanship and Sales Management (3). The principles and practices of selling; the management of sales personnel and the control of sales operations.

CHEMISTRY 2. General Chemistry (3). Continuation of Chemistry 1.

CHEMISTRY 32. Quantitative Chemical Analysis (4). A detailed study of the principles and practices of titimetric and gravimetric analysis; separation methods; introduction to physical methods. Primarily for chemistry majors and others needing a more detailed treatment than is given in Chemistry 27 (Analytical Chemistry). Prerequisite, Chemistry 29.

CHEMISTRY 52, 152. Organic Chemistry (4). Continuation of Chemistry 51, 151.

CHEMISTRY 66, 166. Physical Chemistry (3). A continuation of Chemistry 65, 165.

ECONOMICS 12. Economic History of the United States (3). Important aspects of the evolution of our modern economic system; social, technological, and other changes which have affected economic institutions; public policy problems involved.

ECONOMICS 26. Problems of the National Economy (3). A continuation of Economics 25. Current problems, including international economic planning in peace and war. Prerequisite, Economics 25.

ECONOMICS 73, 173. Modern Economic Theory and Analysis (3). Micro-economic analysis: types of markets; applications of linear programming, theory of games and other techniques for rational business planning; balancing forces in free-enterprise economy. Prerequisite, Economics 25.

ECONOMICS 84, 184. Comparative Economic Systems (3). The structure, operation, and underlying ideology of the major contemporary forms of social-economic organization. Emphasis on the Soviet Union and the United States. Prerequisite, Economics 25.

EDUCATION 52, 152. Principles and Methods of Teaching (3). By means of discussion, case studies, and current educational literature, teaching ideals and procedures are set up and applied to the major teaching fields.

EDUCATION 53, 153. Educational Tests and Measurements (3). The most serviceable tests for measuring achievement are considered; test construction, administration, scoring, and interpretation of results are studied and applied to the classroom.

EDUCATION 60, 160. Elementary School Curriculum (3). From the standpoint of content and methodology. Emphasis on the unit method and the activity program.

EDUCATION 61, 161. Teaching of Elementary Reading and Language Arts (3). Discussions and demonstrations of principles and effective practices in the teaching of all phases of the language arts.

EDUCATION 66, 166. Preparation and Use of Audio-Visual Materials (3). Study is made of available machines, materials and techniques for teaching groups of students.

EDUCATION 88, 188. Secondary School Curriculum (3). Learning materials and activities and their organization in various teaching fields.

***EDUCATION 121. Teaching with Television and Radio (3).** Designed to provide the classroom teacher with an understanding of radio and television so that he can participate in the preparation, utilization and evaluation of educational programs.

***EDUCATION 216-I. Seminar in Secondary School Methods (3).** An exploration in depth of several fundamental principles of teaching. Prerequisite, Education 52 or its equivalent.

***EDUCATION 216-II. Seminar in Elementary School Curriculum (3).** An exploration, at considerable depth, of the problems involved in the development of the modern elementary school curriculum. Prerequisite, Education 160 or its equivalent.

EDUCATION 265. Techniques in Remedial Reading (3). Methods and materials in diagnosis and remedial instruction. Prerequisite, Education 161.

***EDUCATION 284. The Junior High School (3).** The history, philosophy, instructional program, role of the basic skills and guidance, and current trends as developed in the Conant Report.

EDUCATION 291. Educational Research (3). The principles and methods of research with special emphasis upon the technique used in Education. Statistics are studied chiefly from the standpoint of reporting and understanding the results of research.

ENGLISH 2. English Composition (2). Continuation of English 1.

ENGLISH 26. Masterpieces of Western Literature (3). Continuation of English 25.

*For certified experienced teachers only.

- ENGLISH 66, 166.** Chaucer (3). The major works, especially *Troilus* and selected *Canterbury Tales*, as combinations of medieval art and thought with pre-Renaissance motifs and Chaucer's genius for realism.
- ENGLISH 70, 170.** Elizabethan and Jacobean Dramatists (3). Non-Shakespearean dramatists of the English Renaissance. A study of the major plays of Marlowe, Jonson, Beaumont, Fletcher, Tourneur, Webster, and Ford.
- ENGLISH 72, 172.** Greek Classics (in translation) (3). Homer, lyric poetry, the major dramatists, selected dialogues of Plato, Thucydides, and their relations to the classical tradition in English literature.
- ENGLISH 89, 189.** Modern Poetry (3). An analysis of twentieth-century poetry development from such authors as Hardy, Hopkins, Whitman, and Emily Dickinson to those of the present.
- ENGLISH 90, 190.** Modern British and American Drama (3). A study of representative dramatists since the late nineteenth century, including Shaw, Fry, O'Casey, O'Neill, Williams, and others. Emphasis on changing trends in twentieth-century dramatic art.
- ENGLISH 261.** Melville (3). The life, thought, and art of the most complex and representative figure of the American Renaissance. Although emphasis will be placed upon the pre-Civil War novels, the later poetry will also be examined.
- FRENCH 8.** Intermediate French; French Life and Culture (3). A study of some important literary works of the nineteenth and twentieth centuries. Compositions. Prerequisite, French 6 or 7.
- GEOLOGY 98.** Special Problems. For seniors specializing in geology. Prerequisite, 21 hours of geology or permission of department.
- GEOLOGY 200.** Special Problems. Prerequisites, 45 credits in geology and consent of department head and of instructor concerned.
- GEOLOGY 300.** Thesis, Master's Degree.
- GERMAN 2.** Elementary German (3). Conversation, reading, grammar, and composition.
- GOVERNMENT 25.** American Government (3). A study of the principles, machinery, dynamics and problems of American national government.
- GOVERNMENT 26.** European Government (3). A study of the politics and governmental institutions of Great Britain, France, U.S.S.R. and other European countries.
- GOVERNMENT 55, 155.** The Presidency in American Government (3). Constitutional and political aspects of the presidency in legislation, administration and conduct of foreign and military affairs. The president as party leader. Prerequisite, Government 25.
- GOVERNMENT 66, 166.** American Political Thought (3). A study of the development of American political thought from colonial times to the present.
- GOVERNMENT 96, 196.** Seminar (3). A study of special problems in the field of government. By permission of instructor.
- HISTORY 6.** Modern European Civilization (3). A basic survey course covering the period from 1815 to the present.
- HISTORY 26.** The Development of American Civilization (3). A survey of the national development including political, social, economic, and cultural factors in the growth of American democracy. This course covers the period from 1865 to the present.

- HISTORY 54, 154. History of Far Eastern Civilization (3).** A general historical introduction to the civilization and contemporary problems of the Far East.
- HISTORY 72, 172. History of American Westward Expansion, 1763-1893 (3).** Advance of settlement from the Appalachians to the Pacific and the influence of the frontier upon social, economic, and political conditions. Prerequisite, History 25, or permission of instructor.
- HISTORY 75, 175. Europe in the Enlightenment, 1685-1789 (3).** Civilization of Western Europe in the eighteenth century, its social milieu, intellectual setting, institutional forces, religious tendencies, aesthetic contributions, and the growth of revolutionary spirit.
- MATHEMATICS 2. Introductory Mathematics II (3).** A terminal course intended for students whose curriculum calls for just one year of mathematics. A continuation of Mathematics 1, including topics from the calculus, statistics, and mathematics of finance. Prerequisite, Mathematics 1.
- MATHEMATICS 4. Introductory Mathematics IV (3).** A continuation of Mathematics 1 for those students intending to take further courses in mathematics. Trigonometry, Introduction to Analytic Geometry, and Calculus. Prerequisite, Mathematics 1.
- MATHEMATICS 7. Algebra and Trigonometry (3).** For freshman engineers who are deficient in trigonometry. Fractions, quadratic equations, exponents, logarithms, variation, determinants of the second and third orders, and plane trigonometry.
- MATHEMATICS 30. Calculus (3).** A continuation of Mathematics 29 into the field of the integral calculus, with special emphasis on application to problems. Prerequisite, Mathematics 29.
- MECHANICAL ENGINEERING 2. Descriptive Geometry (3).** The theory of orthographic projection. Geometric concepts of lines, planes and solids; solution of engineering problems involving true size, angles, and shapes by graphical methods. Prerequisite, Mechanical Engineering 1.
- MUSIC 13, 14. Applied Music (1).** Advanced study of literature and instrumental technique or voice production. Prerequisite, intermediate level of proficiency as determined by examination.
- MUSIC 23, 24. Vocal Ensemble.** Preparation of various choral works to concert standard. Additional opportunities for instrumental accompanists and vocal soloists. 1 credit recorded on completion of 23, 24. Music 23, prerequisite to Music 24. Admission by permission of instructor.
- MUSIC 29. Music Appreciation—Introduction to Music (3).** Rhythm, melody, harmony, tone quality, and other materials of music. Form; music history; elementary aesthetic principles; reading, listening.
- MUSIC 54. Historical Survey of Music (3).** A survey of the history and literature of music from 1750 through vocal and instrumental music of the 20th century. Prerequisite, Music 1 or 2 (Fundamentals), or 29, or permission of instructor.
- PHILOSOPHY 31. Introduction to Logic and Scientific Method (3).** An inquiry into the nature of critical thinking, including (1) the functions of language, (2) the structure of deductive argument, (3) a glimpse at inductive methods.
- PHILOSOPHY 42. Ethics (3).** An examination of classical and contemporary theories concerning policy formation and the justification of personal decision and ways of life.

- PHYSICAL EDUCATION FOR MEN 1, 2, 3, 4.** Physical Education (2). Aim of the course is to inculcate in the student an adequate knowledge of, a sufficient technique in, and a wholesome attitude toward physical education activities through the medium of individual, dual, and team sports.
- PHYSICAL EDUCATION FOR MEN 31, 32, 33, 34.** Physical Education (2). A continuation of Physical Education 1, 2, 3, and 4.
- PHYSICAL EDUCATION 53, 153.** Physical Education in Elementary and Secondary Schools (3). Modern methods and materials of teaching physical education in elementary and secondary schools.
- PHYSICAL EDUCATION 80, 180.** Driver Education Instructor Course (3). Driver education and driver training at the instructor's level. Leads to certification as instructor in driver education and driver training.
- PHYSICS 26.** Introductory Physics (4). Light, electricity, magnetism and modern physics, using trigonometry and algebra, but not calculus. Intended for premedical, pre dental, preveterinary, and some science major students. Prerequisite, Physics 25.
- PHYSICS 86, 186.** Modern Physics (3). Twentieth-century physics, devoted to nuclear aspects. Prerequisites, Physics 52 and six other credits in junior-senior physics.
- PSYCHOLOGY 28.** General Psychology (3). The nature and problems of adjustment are emphasized. Topics considered include frustration and conflict, adjustment mechanisms and behavior deviations. Prerequisite, Psychology 26 or 27.
- RUSSIAN 2.** Elementary Russian (3). Grammar, exercises in composition and conversation, selected readings. Prerequisite, previous language training.
- RUSSIAN 6.** Intermediate Russian (3). Continuation of Russian 5.
- SOCIOLOGY 25.** Introduction to Sociology (3). A study of the social order and of the individual consideration as a member of his various groups.
- SOCIOLOGY 26.** Principles of Sociology (3). The theoretical development of major sociological concepts with emphasis on American sociologists. Analysis of monographs utilizing the sociological frame of references for selected areas. Prerequisite, Sociology 25.
- SOCIOLOGY 78, 178.** Criminology (3). The nature of crimes and the factors underlying criminal behavior. The machinery of justice; the law, courts, police systems, and correction institutions. Prerequisite, Sociology 25.
- SOCIOLOGY 217.** Juvenile Delinquency (3). Theories of causation and treatment of delinquency. Prerequisites, Sociology 78 and permission of instructor.
- SPANISH 2.** Elementary Spanish (3). Continuation of Spanish 1.
- SPEECH 51.** Voice and Diction and Oral Interpretation (3). Training and drill in the correct production of speech, practice in the fundamentals of vocal interpretation of literature.
- SPEECH 91.** Public Speaking (3). The study and application of principles governing the composition and delivery of public speeches.
- ZOOLOGY 1.** Introductory Zoology (3). Introduction to the principles of biology with special reference to the zoological aspects; protoplasm and the cell, vertebrate anatomy and physiology, embryology, genetics, principles of classification, comprehensive survey of major groups of the animal kingdom, and evolution.



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SUMMER SESSION FEATURES AT OTHER NEW ENGLAND LAND-GRANT UNIVERSITIES

The following special summer courses are available at the institutions listed below:

University of Connecticut

American Maritime History, 6 credits, July 3-August 11.

Programs in Special Education for Elementary and Secondary School Teachers.

Program for Psychological Examiners.

History 239, History of Connecticut. A survey of Connecticut's historical development with stress on political, social and economic aspects. Several field trips are required.

Graduate program in Industrial Education.

University of Maine

Fourth Educational Tour of the United States. For information, write to Dr. Robert V. Supple, 16 Stevens Hall, South, University of Maine, Orono, Maine.

Field Course, Deer Isle, on the Natural History of Coastal Maine. Write to Director of Summer Session for information.

Creative Theatre Laboratory. Write to Dr. Wofford G. Gardner, Head, Department of Speech, University of Maine, Orono, Maine.

University of New Hampshire

New Hampshire Summer Youth Music School, August 20-September 2. Write to Professor Karl H. Bratton, Chairman, Department of Music, University of New Hampshire, Durham, New Hampshire.

Twenty-Fourth Annual New Hampshire Writers' Conference, August 22-September 2. Write to Professor Carroll S. Towle, c/o University Extension Services, University of New Hampshire, Durham, New Hampshire.

Public Library Techniques, July 10-28. Write to Conferences and Institutes, University Extension Services, University of New Hampshire, Durham, New Hampshire.

Marine Invertebrate Zoology (6 credits). Write to Professor George M. Moore, Chairman, Department of Zoology, University of New Hampshire, Durham, New Hampshire.

University of Rhode Island

Seventeenth Annual Art Workshop by the Sea, July 3-August 11.

European Art Tour, June 13-August 16.

Institute in Field Biology and Ecology for High School Teachers of Biology, June 3-August 11.

Workshop on Children in the Family, the School, and the Community, July 17-21.

Interprofessional Workshop in Human Relations, June 25-July 1.

Seventh Annual Conference and Workshop on Reading and the Language Arts, July 24-August 4.

Fifth Annual Conference on the Social Studies: Modern Africa, July 10-21.

Sixth Annual Field Course in Textile Manufacturing, July 10-28.

Summer Course in Gas Chromatography, July 17-21.

Week of Discovery—An Institute for the Liberal Education of Adults, July 8-15.

For information, write to the Dean of the Summer Session, University of Rhode Island, Kingston, Rhode Island.

University of Vermont

Warren Austin Institute in World Understanding—lectures and discussions by international leaders.

Teaching of French in the Elementary School.

SPECIAL COURSES

School of Engineering

CHEMICAL ENGINEERING 75. Instrumentation. A detailed study of the underlying principles and practices of indicating, recording and controlling instruments used on industrial process equipment. Credit 3

Three 40-hour weeks: June 5-23.

Mr. Cashin and Mr. Kim

Engineering Annex

Prerequisites, Physics 27, 28; Chemical Engineering 55, Calculations.

CHEMICAL ENGINEERING 88. Chemical Engineering Laboratory. A quantitative study of pilot plant size equipment illustrating some unit operations.

Credit 3

Three 40-hour weeks: August 21-September 8.

Mr. Lindsey and Mr. Kim

Engineering Annex

Prerequisite, Chemical Engineering 56, Unit Operations II.

CIVIL ENGINEERING 27. Plane Surveying. The basic principles of mensuration; use of tape, transit, and level; a brief consideration of route surveying for forestry majors. Credit 3

Three 40-hour weeks: July 17-August 4.

Mr. Hendrickson

Engineering Building

Prerequisites, Mathematics 5, Introductory Engineering Mathematics, or Mathematics 7, Algebra and Trigonometry.

CIVIL ENGINEERING 28. Property and Topographic Surveying. A transit and tape property survey requiring reference to Registry of Deeds records; also a topographical survey. Credit 3

Three 40-hour weeks: June 5-23.

Mr. Grow

Engineering Building

Prerequisites, Civil Engineering 25, Surveying or Civil Engineering 27, Plane Surveying.

CIVIL ENGINEERING 30. Route Surveying Practice. A preliminary survey for a short highway location and the preparation of maps and profile. Credit 3

Three 40-hour weeks: June 26-July 14.

Mr. Boyer

Engineering Building

Prerequisite, Civil Engineering 25 or 27.

ELECTRICAL ENGINEERING 85. Electrical Measurements. Theory and practice of electric and magnetic measurements; accuracy, precision, and limitations of measurements devices. Credit 3

Three 40-hour weeks: July 31-August 18; August 21-September 8.

Engineering Building

Mr. Roys and Mr. Laestadius

Prerequisite, Electrical Engineering 42.

MECHANICAL ENGINEERING 23. Shop. Welding and machine shop, use of various machine and hand tools used in metal working. Credit 3

Three 40-hour weeks: July 31-August 18; August 21-September 8.

Engineering Shop

Mr. Patterson and Mr. Costa

MECHANICAL ENGINEERING 27. Shop. Welding, manual and automatic.
For mechanical engineering majors. **Credit 3**

Three 40-hour weeks: June 5-23; June 26-July 14.

Engineering Shop

Mr. Patterson, Mr. Hopkins

MECHANICAL ENGINEERING 28. Machine Shop. The fundamental machine tools; lathe, planer, shaper, milling machine and drill press. Credit 3

Three 40-hour weeks: June 5-23; June 26-July 14.

Mr. Costa, Mr. Day

Engineering Shop

Department of Forestry and Wildlife Management

FORESTRY 55, 155. The Elements of Forest Mensuration. Methods of determining the volume and value of the forest growing stock; type mapping; methods of predicting growth of trees and stands. Credit 3

Three 44-hour weeks: June 5-23.

Mr. MacConnell and Mr. Mawson

Conservation Building

FORESTRY 78. Harvesting of Forest Products. Practice in the harvesting and preparation of direct forest products. Field trips to active forest properties and to visit pulpwood operations and manufacturing plants. Credit 3

Three 44-hour weeks: June 26-July 14.

Mr. MacConnell and Mr. Bond

Conservation Building

School of Nursing

Job related courses and work conferences for professional graduate nurses.

NURSING 65 S (G.N.). Management of Public Nursing Practice. A two week course offered to public health nurses who are assuming a management role in official and non-official public health nursing services, school health services, and industrial health services. Credit 2

Prerequisite, Nursing 58—Principles of Public Health Nursing or Introduction to Public Health Nursing.

June 26 through July 8.

Miss Vera Griffin, R.N., M.S.

1st week—M, T, W, Th, F }
2nd week—M, W, Th, F, S } 9-12 and 1-3.

NURSING 70 S (G.N.). Principles of Team Nursing. A two week work conference which explores the leadership role of the professional nurse responsible for qualitative nursing practice. Major emphasis will be placed on the philosophy and use of Team Nursing as utilized in the nursing units of a hospital. Credit 2

June 26 through July 8.

1st week—M, T, W, Th, F }
2nd week—M, W, Th, F, S } 9-12 and 1-3.

NURSING 57 S (G.N.). Mental Hygiene in Nursing. A two week work conference offered to graduate professional nurses who wish to extend their understanding of human behavior and interpersonal relationships.
 July 10 through July 21. Credit 2

Daily, Monday through Friday, 9-12 and 1-3.

Undergraduate Continuing Courses for Students Enrolled in the Basic Nursing Program of the School of Nursing

NURSING 52. Maternal and Child Nursing 1. Course content and field experience in selected community child caring agencies are geared to increasing the student's knowledge of child growth and development. A unit dealing with the responsibilities of marriage and family living is included.
 July 31 through August 25. Credit 4

Miss DiMaggio and the Allied Professional
 Staff of Cooperating Community Agencies.

HOME ECONOMICS 195. Human Development Seminar. The development of the human being from infancy to old age with consideration of roles and relationships at the various stages of development. For Extension workers and junior or senior high school home economics teachers.

July 3-14.

Skinner Hall

Graduate Credit 2
 Mr. Joseph D. Burroughs

GENERAL INFORMATION

For most courses (non-laboratory) Summer Session classes meet for 90 minute periods on Monday, Tuesday, Thursday, and Friday. Wednesday morning periods will be 70 minutes each. Class schedules for most courses (including laboratory) are listed under the timetable on pages 27-34. The timetables for special courses in Engineering, Forestry, and Nursing are included under the course descriptions in the bulletin. The interpretation of class periods into clock hours for non-laboratory courses follows:

<i>Class Period</i>	<i>Wed. Hours (a.m.)</i>	<i>Mon., Tues., Thurs., Fri. Hours (a.m.)</i>
1	8:00- 9:10	8:00- 9:30
2	9:20-10:30	9:45-11:15
3	11:50- 1:00	11:30- 1:00

Special lectures and convocations will be scheduled on some Wednesdays between 10:40-11:40 a.m.

Abbreviations for Names of University Buildings

B.	Bartlett Hall
C.H.	Clark Hall
Dra.	Draper Hall
E.B.	Engineering Building
G.	Goessmann Laboratory
H.	Hasbrouck Laboratory
H.P.	Hicks Physical Education Building
Mach.	Machmer Hall
M.	Morrill Science Center
O.C.	Old Chapel
P.H.B.	Public Health Building

Final Examination Schedule—Summer Session 1961

Final exams are scheduled according to the table below:

<i>Time of Meeting on Daily Schedule</i>	<i>Time of Final Exam First Term</i>	<i>Time of Final Exam Second Term</i>
Period (1)	July 29, 8-10 a.m.	August 31, 2-4 p.m.
Period (2)	July 28, 2-4 p.m.	August 31, 8-10 a.m.
Period (3)	July 28, 8-10 a.m.	September 1, 8-10 a.m.
Afternoon Period	July 28, 10:40 a.m. to 12:40 p.m.	August 31, 10:40 a.m. to 12:40 p.m.

Rooms for the exams are the same as those on the daily schedule.

TIMETABLE

FIRST TERM
(June 26 - July 29)

COURSE	CREDIT	MEETING PERIOD	BUILDING AND ROOM		INSTRUCTOR
AGRICULTURAL ENGINEERING					
200—Special Problems	3	By arrgt.			Grad. Staff
300—Thesis, Master's Degree	4-10	By arrgt.			Grad. Staff
ANTHROPOLOGY					
63, 163—Social Anthropology	3	(2)	E.,	27	Conant
67, 167—Ethnology of Africa	3	(3)	E.,	27	Conant
ART					
33—Basic Drawing	3	1:45-5, M-F	B.,	225	Coughlin
57 and 58—Printmaking	3	(1, 2)	B.,	219	Matheson
BACTERIOLOGY					
31—Introductory Bacteriology	4	Lect. (2) Lab. (2-4), M-Th	P.H.B.,	208	Czarnecki
BOTANY					
1—Introductory Botany	3	1:45-4:30, M-F	C.H.,	105 202	Bailey
26—Flora of New England	3	1:45-4:30, M-F	C.H.,	104	Long
BUSINESS ADMINISTRATION					
Accounting 25—Introduction to Accounting	3	(2)	Dra.,	111	Fitzgerald
Finance 65—Corporation Finance	3	(3)	Dra.,	117	Burak
General Business 71—Business Law	3	(1)	Dra.,	117	Burak
Management 61—Principles of Management	3	(1)	Dra.,	122	Elkins
Management 64—Personnel Management	3	(3)	Dra.,	111	Elkins
Marketing 53—Marketing Principles	3	(2)	Dra.,	117	Zane
Marketing 62—Marketing Research	3	(2)	Dra.,	122	Drew-Bear
CHEMISTRY					
1—General Chemistry	3	1:45-4:30, M-F	G.,	51, 57	Oberlander
29—Qualitative Analysis	4	Lab. (1, 2) Lect. 1:45-2:45 M-F	G., G.,	7 26	Wynne
51, 151—Organic Chemistry	4	Lab. 1:45-5 T.Th. Lect. (2)	G., G.,	112 51	Cannon
65, 165—Physical Chemistry	3	(1)	G.,	51	Stidham
CIVIL ENGINEERING					
34—Statics	3	(1)	E.B.,	234	Hendrickson
ECONOMICS					
25—Elements	3	(2)	Mach.,	W33	Gamble
56, 156—Business Fluctuations	3	(2)	Mach.,	W37	Miller
83, 183—Social Control of Business	3	(3)	Mach.,	W37	Miller
95, 195—Seminar	1-3	(1)	Mach.,	W37	Gamble

COURSE	CREDIT	MEETING PERIOD	BUILDING AND ROOM	INSTRUCTOR
EDUCATION				
51, 151—History of Education I	3	(1)	Mach., E35	Osgood
II	3	(3)	Mach., E35	
62, 162—Elementary School Arithmetic	3	(3)	Mach., E36	Hall
64, 164—Principles of Elementary Education	3	(2)	Mach., E32	Miss McManamy
72, 172—Vocational Education in Agriculture	3	(2)	Mach., E36	Jones
75, 175—Techniques of Teaching Vocational Agriculture	3	(3)	Mach., E34	Jones
77, 177—Principles of School Guidance	3	(2)	Mach., E35	Pippert
130—Elementary School Science	3	(1)	Mach., E36	Hall
210—Administering Extra Curricular Activities	3	(2)	Mach., E34	Oliver
211—Community Relations for School Personnel	3	(1)	Mach., E34	Oliver
216—Seminar on the Gifted Pupil	3	(3)	Mach., E32	Miss McManamy
230—Comparative Education	3	(3)	Mach., E37	Osgood
231—Contemporary Problems in Education	3	(2)	Mach., E37	
241—Administration of School Guidance	3	(1)	Mach., E32	Pippert
ENGLISH				
1—English Composition I	2	(1)	B., 307	Kaplan
II	2	(2)	B., 307	Chametzky
III	2	(3)	B., 307	Mrs. Michelman
25—Masterpieces of Western Literature I	3	(1)	B., 301	Lane
II	3	(2)	B., 301	Miss Horrigan
56, 156—American Poetry	3	(2)	B., 319	Kaplan
67, 167—Shakespeare	3	(2)	B., 317	Lane
79, 179—Romantic Poets	3	(3)	B., 301	Haven
83, 183—Development of the English Novel	3	(1)	B., 319	Weston
84, 184—Victorian Poetry	3	(1)	B., 317	Silver
203—Middle English	3	(1)	B., 314	Helming
FRENCH				
7—Intermediate French	3	(1)	B., 202	Johnson
53, 153—French Theatre of the Twentieth Century	3	(2)	B., 107	Miss Clarke
French Graduate Reading Course	None	(2)	B., 202	Johnson
Romance Languages 215	3	(3)	B., 107	Fabrizi
GEOLOGY				
97—Special Problems	1-6	By arrgt.		Staff
200—Special Problems	2-6	By arrgt.		Staff
300—Thesis, Master's Degree	10	By arrgt.		Staff
GERMAN				
1—Elementary German	3	(1)	B., 208	Hauser
Graduate Reading Course	None	(2)	B., 208	Heller

COURSE	CREDIT	MEETING PERIOD	BUILDING AND ROOM	INSTRUCTOR
GOVERNMENT				
25—American Government	3	(3)	Mach., E23	Fenton
26—European Government	3	(1)	Mach., E23	Beth
63, 163—Political Parties and Elections	3	(1)	Mach., E22	Fenton
65, 165—Constitutional Law	3	(2)	Mach., E23	Beth
95, 195—Seminar	3	By arrgt.		Staff
HISTORY				
5—Modern European Civilization	3	(2)	B., 308	Thompson
25—Development of American Civilization	3	(2)	B., 302	Ferrell
70, 170—Europe Since 1918	3	(3)	B., 308	Caldwell
77, 177—Modern Britain	3	(1)	B., 308	Caldwell
82, 182—Diplomatic History of the U. S.	3	(1)	B., 302	Ferrell
83, 183—The Progressive Age, 1900-1920	3	(3)	B., 302	Thompson
MATHEMATICS				
1—Introductory Mathematics I	3	(2)	Mach., W27	Wagner
29—Calculus	3	(3)	Mach., W27	Wagner
MUSIC				
13—Applied Music	1	By arrgt.		Schwartz
23—Vocal Ensemble	½	By arrgt.		Schwartz
29—Music Appreciation—Introduction to Music	3	(2)	O.C. Aud.	Schwartz
PHILOSOPHY				
31—Introduction to Logic and Scientific Method	3	(1)	B., 305	Swanson
72, 172—Philosophy of Science	3	(2)	B., 305	Swanson
PHYSICAL EDUCATION FOR MEN				
1-4—Physical Education	2	(1) 2-3, M-F	H.P.	Bergquist
31-34—Physical Education	2	(2) 5-6, M-F	H.P.	James
53, 153—Physical Education in Elementary and Secondary Schools	3	By arrgt.		Cobb
80, 180—Driver Education Instructor Course	3	By arrgt.		Briggs
PHYSICS				
25—Introductory Physics	4	(1, 2)	H., 100, 106	Mathieson
85, 185—Modern Physics	3	(3)	H., 111	Foland
PSYCHOLOGY				
26—General Psychology	3	(1)	B., 227	Price
56, 156—Educational Psychology	3	(2)	B., 61	Mrs. Field
65, 165—Child Psychology	3	(3)	B., 61	Price
83, 183—Abnormal Psychology	3	(1)	B., 61	Neet
283—Practicum	3	By arrgt.		Epstein
PUBLIC HEALTH				
61—General and Community Sanitation	3	(1)	P.H.B., 208	Wisnieski

COURSE	CREDIT	MEETING PERIOD	BUILDING AND ROOM	INSTRUCTOR
RUSSIAN				
1—Elementary Russian	3	(1)	B., 210	Frink
5—Intermediate Russian	3	(3)	B., 210	Frink
SOCIOLOGY				
25—Introduction	3	(1)	Mach., E27	Lovald
51, 151—Urban Sociology	3	(3)	Mach., E27	Lovald
56, 156—Race Relations	3	(1)	Mach., E25	King
57, 157—The Family	3	(2)	Mach., E27	King
75, 175—Social Problems	3	(1)	Mach., W33	Driver
214—Criminology	3	By arrgt.		Driver
SPANISH				
1—Elementary Spanish	3	(2)	B., 201	Fabrizi
SPEECH				
84, 184—Audiology	3	(2)	B., 114	Miss Hegarty
85, 185—Introduction to Speech Pathology	3	(3)	B., 114	Miss Hegarty
STATISTICS				
77, 177—Elementary Experimental Statistics	3	1:30-3, M-F Lab. by arrgt.	Dra., 125	Russell
79, 179—Elementary Economic Statistics	3	Lect. (1) Lab. by arrgt.	Dra., 125	Russell
ZOOLOGY				
80—Ornithology	3	1:45-5, M-Th	M., 138, 343	Bartlett

SECOND TERM

(July 31 - September 1)

COURSE	CREDIT	MEETING PERIOD	BUILDING AND ROOM		INSTRUCTOR
AGRICULTURAL ENGINEERING					
200—Special Problems	3	By arrgt.			Grad. Staff
300—Thesis, Master's Degree	4-10	By arrgt.			Grad. Staff
ART					
34—Advanced Drawing	3	1:45-5, M-F	B.,	225	Coughlin
51, 52—Watercolor	3	(1, 2)	B.,	209	MacIver
BOTANY					
25—Plant Kingdom	3	1:45-3:50, M-F	C.H.,	104	Long
BUSINESS ADMINISTRATION					
Accounting 26—Introduction to Accounting	3	(2)	Dra.,	111	Krystofik
Accounting 73, 173—Federal Income Tax Procedure	3	(1)	Dra.,	111	Krystofik
Finance 75—Principles of Insurance	3	(2)	Dra.,	117	Kyler
Management 81—Theory of Business Administration	3	(3)	Dra.,	111	O'Donnell
Marketing 54—Salesmanship and Sales Management	3	(1)	Dra.,	117	Hardy
CHEMISTRY					
2—General Chemistry	3	1:45-4:30, M-F	G.,	51, 57	Richason
32—Quantitative Chemical Analysis	4	Lab. (1, 2) Lect. 1:45-2:45 M-F	G., G.,	228 26	Roberts
52, 152—Organic Chemistry	4	Lect. (2) Lab. 1:45-5 T,Th.	G., G.,	51 112	McWhorter
66, 166—Physical Chemistry	3	(1)	G.,	51	Stidham
ECONOMICS					
12—Economic History of the United States	3	(1)	Mach.,	W37	McCartney
26—Problems of the American Economy	3	(2)	Mach.,	W33	McCartney
73, 173—Modern Economic Theory	3	(1)	Mach.,	E25	Meier
84, 184—Comparative Economic Systems	3	(3)	Mach.,	W37	Meier
EDUCATION					
52, 152—Principles and Methods of Teaching I	3	(1)	Mach.,	E35	Anthony
II	3	(2)	Mach.,	E36	Barfield
53, 153—Educational Tests and Measurements	3	(2)	Mach.,	E37	Meierhenry
60, 160—Elementary School Curriculum	3	(1)	Mach.,	E36	Rogers
61, 161—Elementary School Reading and Language Arts	3	(3)	Mach.,	E32	Miss O'Leary
66, 166—Audio-Visual Materials in Teaching	3	(3)	Mach.,	E37	Wyman

COURSE	CREDIT	MEETING PERIOD	BUILDING AND ROOM	INSTRUCTOR
88, 188—Secondary School Curriculum I	3	(2)	Mach., E34	Kornegay
II	3	(3)	Mach., E35	Barfield
121—Teaching with Television and Radio	3	(1)	Mach., E37	Wyman
216I—Seminary in Secondary School Methods	3	(2)	Mach., E35	Anthony
216II—Seminar in Elementary School Curriculum	3	(3)	Mach., E36	Rogers
265—Techniques in Remedial Reading	3	(2)	Mach., E32	Miss O'Leary
284—The Junior High School	3	(1)	Mach., E34	Kornegay
291—Educational Research	3	(3)	Mach., E34	Meierhenry
ENGLISH				
2—English Composition I	2	(1)	B., 307	Ratner
II	2	(2)	B., 307	Wolf
III	2	(3)	B., 307	Mrs. Michelman
26—Masterpieces of Western Literature I	3	(1)	B., 301	O'Donnell
II	3	(2)	B., 301	O'Donnell
66, 166—Chaucer	3	(1)	B., 317	
70, 170—Elizabethan and Jacobean Dramatists	3	(3)	B., 301	Wolf
72, 172—Greek Classics in Translation	3	(2)	B., 317	Page
89, 189—Modern Poetry	3	(1)	B., 319	
90, 190—Modern British and American Drama	3	(3)	B., 317	Ratner
261—Melville	3	(2)	B., 319	
FRENCH				
French 8—Intermediate French	3	(1)	B., 202	Smith
GEOLOGY				
98—Special Problems	1-6	By arrgt.		Staff
200—Special Problems	2-6	By arrgt.		Staff
300—Thesis, Master's Degree	10	By arrgt.		Staff
GERMAN				
2—Elementary German	3	(1)	B., 208	Stawiecki
GOVERNMENT				
25—American Government	3	(1)	Mach., E23	Harris
26—European Government	3	(3)	Mach., E23	Goodwin
55, 155—The Presidency in American Government	3	(2)	Mach., E23	Goodwin
66, 166—American Political Thought	3	(3)	Mach., E25	Harris
96, 196—Seminar	3	By arrgt.		Staff
HISTORY				
6—Modern European Civilization	3	(2)	B., 308	Greenbaum
26—Development of American Civilization	3	(2)	B., 302	Davis
54, 154—History of Far Eastern Civilization	3	(1)	B., 308	Cody

COURSE	CREDIT	MEETING PERIOD	BUILDING AND ROOM	INSTRUCTOR
72, 172—History of American Westward Expansion	3	(3)	B., 308	Davis
75, 175—Europe in the Enlightenment	3	(3)	B., 302	
MATHEMATICS				
2—Introductory Mathematics II	3	(2)	Mach., W27	Naylor
4—Introductory Mathematics IV	3	(2)	Mach., W21	Andersen
7—Algebra and Trigonometry	3	(3)	Mach., W21	Naylor
30—Calculus	3	(3)	Mach., W27	Andersen
MECHANICAL ENGINEERING				
2—Descriptive Geometry	3	Lect. (1) Lab. 2-5, M-F	E.B., 142 E.B., 142	Weidman
MUSIC				
13, 14—Applied Music	1	By arrgt.		
23, 24—Vocal Ensemble	1	By arrgt.		
29—Music Appreciation—Introduction to Music	3	(1)	O.C. Aud.	
54—Music History—Historical Survey of Music	3	(2)	O.C. Aud.	
PHILOSOPHY				
31—Introduction to Logic and Scientific Method	3	(2)	B., 305	Ehrlich
42—Ethics	3	(3)	B., 305	Ehrlich
PHYSICAL EDUCATION FOR MEN				
1-4—Physical Education	2	(1) 2-3, M-F (2) 5-6, M-F	H.P. H.P.	Douglas
31-34—Physical Education	2	(1) 2-3, M-F (2) 5-6, M-F	H.P. H.P.	Garber
53, 153—Physical Education in Elementary and Secondary Schools	3	By arrgt.		Cobb
80, 180—Driver Education Instructor Course	3	By arrgt.		Briggs
PHYSICS				
26—Introductory Physics—Light, Electricity, Magnetism	4	(1, 2)	H., 100, 106	Crooker
86, 186—Modern Physics	3	(3)	H., 111	Foland
PSYCHOLOGY				
28—General Psychology	3	(2)	B., 61	Mrs. Field
RUSSIAN				
2—Elementary Russian	3	(1)	B., 210	Weeks
6—Intermediate Russian	3	(3)	B., 210	
SOCIOLOGY				
25—Introduction to Sociology	3	(2)	Mach., E27	Wilkinson
26—Principles of Sociology	3	(1)	Mach., E27	Wilkinson
78, 178—Criminology	3	1:45-3:15, M-F	Mach., E22	Lopreato
217—Juvenile Delinquency	3	By arrgt.		Lopreato
SPANISH				
2—Elementary Spanish	3	(2)	B., 201	

COURSE	CREDIT	MEETING PERIOD	BUILDING AND ROOM	INSTRUCTOR
SPEECH				
51—Voice and Diction and Oral Interpretation	3	(1)	B., 212	Savereid
91—Public Speaking	3	(3)	B., 131	Savereid
ZOOLOGY				
1—Introductory Zoology	3	1:45-4:30, M-F	M., 138, 332	Lieberman

UNIVERSITY OF MASSACHUSETTS

SUMMER SESSION

Application for Undergraduate Students

This application is primarily for students who attend or have attended other colleges. Under certain circumstances (e.g., for professional improvement), persons who have not attended college may qualify. Such persons should submit a letter to the Registrar with the application stating their academic background and their reasons for wanting to take the courses they have selected. Regularly enrolled students at the University of Massachusetts should secure and file a special Summer School application at the Registrar's Office.

Mr.

Name Mrs.
Miss Last First Middle

Home address
Street and Number

.....
City State

Date of Birth Sex..... Single..... Married.....

Attendance

Secondary School Dates.....

Attendance

College(s) attended Dates.....

If not now attending, what was your reason for leaving?

Have you ever applied for admission to the University of Massachusetts?

If so, when?

Will you commute from home? or require a dormitory room?

In order to attend the University of Massachusetts Summer School, a student must be in good standing (eligible to continue studying) at the college which he attended. Have the following statement completed by your Registrar. A transcript of record is not required.

This is to certify that
Student's name

is (or left) in good standing at
Name of college

and has our approval to take the courses listed on this application.

Signed.....

Tentative Program

The normal program consists of one course during the special session and two courses during each main summer term. An additional course can be approved only in case the student's academic record is high. (See page 6 under heading "Study Load.")

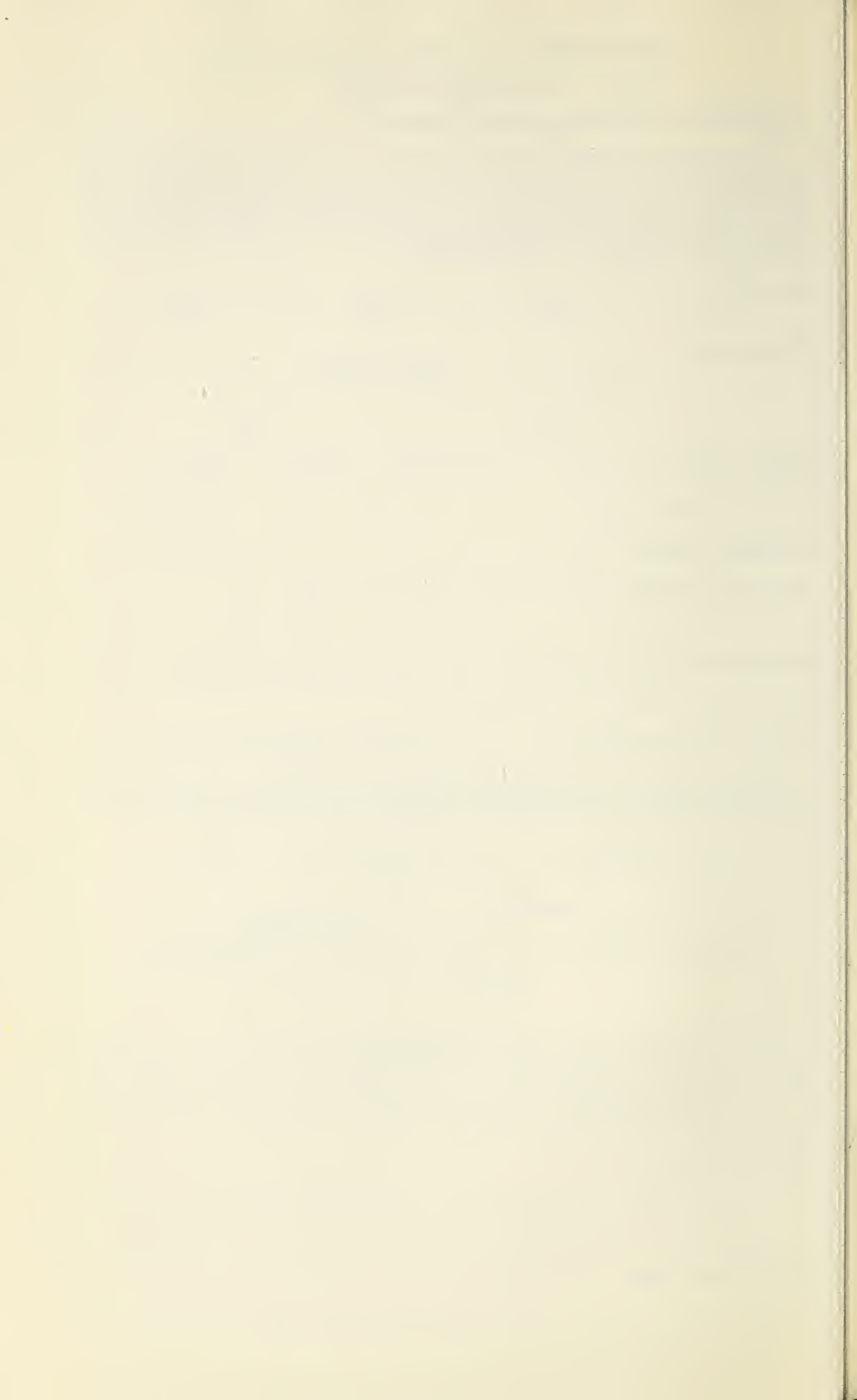
List the department, number, and title, as they appear in the catalog, for which you wish to be registered (e.g., Art 33, Freehand Drawing).

First Main Term:

.....
.....

Second Main Term:

.....
.....



UNIVERSITY OF MASSACHUSETTS

SUMMER SESSION

Application Procedures for Graduate Students

Prospective graduate students (except those enrolled at the University during the spring semester) should *fill out and send this page* to the Dean, Graduate School, University of Massachusetts, as soon as possible. In this way, admission to courses with limited enrollment can be assured.

Graduate students intending to start work toward an advanced degree at the University of Massachusetts must submit a graduate application blank (*write to above address for this blank*), two *official* transcripts and two letters of recommendation from persons qualified to judge ability in academic work.

Graduate students who wish to study here for the summer with no intention of working for an advanced degree at this University must submit graduate application blank (*write to above address for this blank*) and two *official* transcripts. Students in this category will be considered Special Graduate Students.

Graduates of Normal Schools are permitted to take courses in Education as Special Graduate Students.

Mr.
 Name Mrs.
 Miss Last First Middle

Home Address
 Street and Number

 City State

Date of BirthSex.....Single.....Married.....
 Attendance

College(s) AttendedDates.....

What degrees and where earned

Will you be studying under the G. I. Bill?

Will you require a dormitory room? If so, return application for dormitory room.

Will you commute from home?

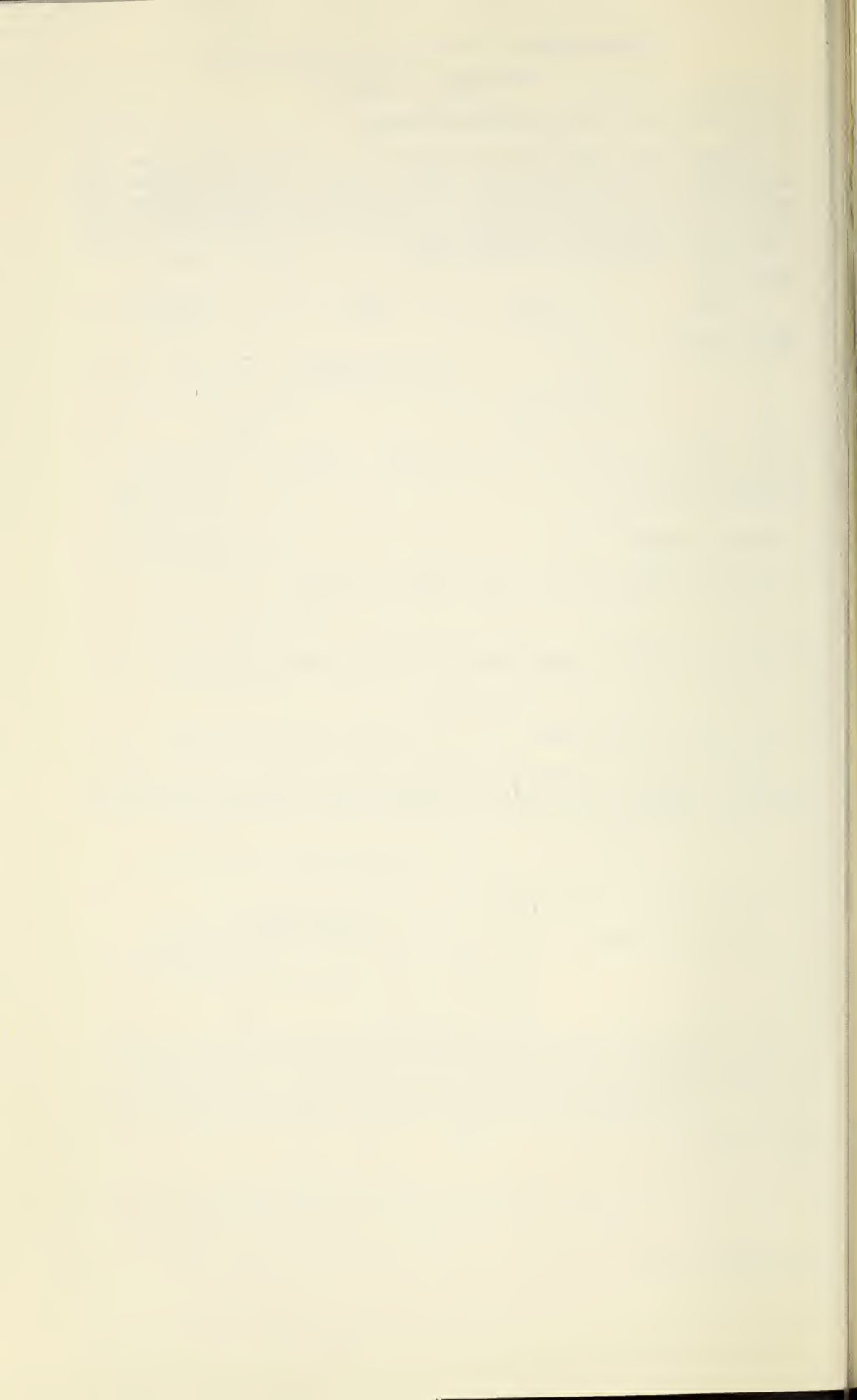
Tentative Program

A normal program consists of one course during the special session and two courses during each of the main summer terms. An additional course can be approved only in case the student's academic record is high. (See page 6, under heading, Study Load.)

List the courses for which you wish to be registered.

Courses:	Name and Number	Descriptive Title
First Summer Term:		
.....		
.....		

Second Summer Term:		
.....		
.....		



UNIVERSITY OF MASSACHUSETTS

SUMMER SESSION

Application Procedures for Graduate Students

Prospective graduate students (except those enrolled at the University during the spring semester) should *fill out and send this page* to the Dean, Graduate School, University of Massachusetts, as soon as possible. In this way, admission to courses with limited enrollment can be assured.

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Graduate students who wish to study here for the summer with no intention of working for an advanced degree at this University must submit graduate application blank (*write to above address for this blank*) and two *official* transcripts. Students in this category will be considered Special Graduate Students.

Graduates of Normal Schools are permitted to take courses in Education as Special Graduate Students.

Mr.

Name Mrs.
Miss Last First Middle

Home Address
Street and Number

.....
City State

Date of Birth Sex..... Single..... Married.....
Attendance

College(s) Attended Dates

What degrees and where earned

Will you be studying under the G. I. Bill?

Will you require a dormitory room? If so, return application for dormitory room.

Will you commute from home?

Tentative Program

A normal program consists of one course during the special session and two courses during each of the main summer terms. An additional course can be approved only in case the student's academic record is high. (See page 6, under heading, Study Load.)

List the courses for which you wish to be registered.

Courses:	Name and Number	Descriptive Title
----------	--------------------	----------------------

First Summer Term:

.....
.....

Second Summer Term:

.....
.....



CERTIFICATION OF RESIDENCE

To be entitled to the low tuition rate established for residents of Massachusetts, applicants for admission to the University Summer Session must return this form with the application.

Student's Name

Statement of Town or City Clerk

This will certify that
Parent or guardian's name or student's name if over 21

is a resident of
Town or City

Massachusetts, on 196.....
Date

(Seal) Signed

Title

NOTE: For the purposes of this certification, a person is considered a resident who has established a bona fide residence or domicile in the Commonwealth with the intention of continuing to maintain it as such.

Application for Dormitory Room

Male.....

Female.....

Name
Last First Middle

Period of Planned attendance: First term (June 26-July 29).....

Second term (July 31-September 1).....

Special Session (list dates).....

If you have a choice of room-mate, list the name here

Any physical limitation?

Signed

Address



In addition to its program of instruction during the regular academic year and Summer Sessions, the University of Massachusetts has been a focal point for gatherings of educators, research workers, government officials, and citizens who meet to discuss problems related to the advancement of academic, professional, vocational, civic and cultural interests.



OTHER BULLETINS:
UNDERGRADUATE COURSES
GRADUATE COURSES
STOCKBRIDGE SCHOOL

UNIVERSITY OF MASSACHUSETTS

BULLETIN

UNDERGRADUATE
SCHOOLS | 1961-62





UNIVERSITY
of
MASSACHUSETTS
Amherst

Catalogue of the University
1961-1962

FOREWORD

This Catalogue of the University of Massachusetts presents announcements concerning its Colleges, Schools and Divisions for the sessions of 1961-1962.

The University reserves, for itself and its departments, the right to withdraw or change the announcements made in its Catalogue.

VOLUME LIII

MARCH, 1961

NUMBER II

Published four times a year by the University of Massachusetts in February, March, August and November.

Second class mail privileges authorized at Amherst, Mass.

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PUBLICATION OF THIS DOCUMENT APPROVED BY
ALFRED C. HOLLAND, STATE PURCHASING AGENT

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Correspondence regarding various phases of the University program should be directed as follows:

Academic Affairs

GILBERT L. WOODSIDE, *Acting Provost*

Admission, Registration and Transcripts

MARSHALL O. LANPHEAR, *Registrar*

Expenses, Payments

KENNETH JOHNSON, *Treasurer*

Extra-Curricular Activities

WILLIAM D. SCOTT, *Director, Student Union*

Four College Cooperation

GILBERT L. WOODSIDE, *Acting Provost*

Graduate School

GILBERT L. WOODSIDE, *Dean*

Housing

HERBERT A. RANDOLPH, *Housing Supervisor*

Loans

DAVID LAWRENCE, *Assistant Director of Placement*
—Men

Men's Affairs

ROBERT S. HOPKINS, *Dean of Men*

Publications, News

WILLIAM DEMINOFF, *Director of Publications and*
News Editor

Scholarships

DAVID LAWRENCE

Short Courses

FRED P. JEFFREY, *Associate Dean, College of Agriculture*

Stockbridge School of Agriculture

FRED P. JEFFREY, *Director*

Student Employment

ROBERT J. MORRISSEY, *Director of Placement*
GEORGE E. EMERY, *Placement Officer*

Summer Sessions

OFFICE OF THE PROVOST

Veterans' Affairs

GEORGE E. EMERY, *Veterans' Coordinator*

Women's Affairs

HELEN S. CURTIS, *Dean of Women*

CALENDAR

1961

January

- 3 — Tuesday. Classes resume at 8 a.m.
- 11 — Wednesday. Last day of class meetings.
- 12 — Thursday. Reading day.
- 13 — Friday. Final examinations begin at 8 a.m.
- 21 — Saturday. Final examinations close at 5 p.m.
- 30 — Monday. Registration.
- 31 — Tuesday. Classes begin at 8 a.m.

February

- 22 — Wednesday. Washington's Birthday. No classes.
- 23 — Thursday. Wednesday classes will be held.

March

- 25 — Saturday. Marks close for mid-semester reports.
- 30 — Thursday. Spring vacation begins after last class.

April

- 10 — Monday. Classes resume at 8 a.m.
- 19 — Wednesday. Patriot's Day. No classes.

May

- 2 — Tuesday. Counseling Day. No classes.
- 20 — Saturday. Classes end at noon.
- 22 — Monday. Final examinations begin at 8 a.m.
- 29 — Monday. Final examinations close at 5 p.m.
- 30 — Tuesday. Memorial Day. No classes.

June

- 4 — Sunday. Commencement.

SUMMER SESSIONS

1961

FIRST TERM	JUNE 26 — JULY 29
SECOND TERM	JULY 31 — SEPTEMBER 1

September

- 13 — Wednesday. Registration.
- 14 — Thursday. Classes begin at 8 a.m.

November

- 4 — Saturday. Mid-semester marks close.
- 11 — Saturday. Veterans' Day. No classes.
- 21 — Tuesday. Thanksgiving recess begins after last class.
- 27 — Monday. Classes resume at 8 a.m.

December

- 7 — Thursday. Counseling Day. No undergraduate classes.
- 19 — Tuesday. Christmas recess begins after last class.

1962

January

- 3 — Wednesday. Classes resume at 8 a.m.
- 13 — Saturday. Last day of class meetings.
- 15 — Monday. Final examinations begin at 8 a.m.
- 23 — Tuesday. Final examinations end at 5 p.m.

February

- 1 — Thursday. Registration.
- 2 — Friday. Classes begin at 8 a.m.

March

- 24 — Saturday. Mid-semester marks close. Spring recess begins after last class.

April

- 2 — Monday. Classes resume at 8 a.m.

May

- 1 — Tuesday. Counseling Day. No undergraduate classes.
- 10 — Thursday. Honors Day.
- 22 — Tuesday. Last day of class meetings.
- 24 — Thursday. Final examinations begin at 8 a.m.

June

- 2 — Saturday. Final examinations end at 5 p.m.
- 10 — Sunday. Commencement.

UNDERGRADUATE MAJORS

College of Arts and Sciences

Art	Music
Astronomy (Four College Cooperation Program)	Philosophy
Bacteriology	Physics
Botany	Pre-Dental
Chemistry	Pre-Medical
Economics	Pre-Veterinary
English	Psychology
Geology	Public Health
German	Romance Languages
Government	Russian
History	Sociology and Anthropology
Journalism	Speech
Mathematics	Zoology

College of Agriculture

Agricultural Business	Food Technology
Agricultural Engineering	Forestry
Agronomy	Landscape Architecture
Animal Science	Olericulture
Dairy Technology	Plant Pathology
Entomology	Pomology
Floriculture	Poultry Science
Food Distribution	Wildlife Management
Food Management	

School of Business Administration

Accounting	Personnel Management and Industrial Relations
General Business	Production Management
Business Administration and Economics	Marketing
Finance	Merchandising
General Management	

School of Education

Education	Elementary Education
-----------	----------------------

UNDERGRADUATE MAJORS

School of Engineering

Chemical Engineering

Civil Engineering

Electrical Engineering

Industrial Engineering

Mechanical Engineering

School of Home Economics

Child Growth and Development

Foods, Nutrition and Institutional Administration

Pre-Research in Foods and Nutrition

Home Economics Education and Extension

Merchandising

School of Nursing

General Nursing

School of Physical Education

Physical Education for Men

Physical Education for Women

Recreation Leadership

BOARD OF TRUSTEES

HARRY DUNLAP BROWN, B.S. (University of Massachusetts), Harbor Coves, North Chatham	1961
JOHN WILLIAM HAIGIS, JR., B.A. (Amherst College), Greenfield	1961
HUGH THOMPSON, Milton	1962
PHILIP FERRY WHITMORE, B.S. (University of Massachusetts), Sunderland	1962
WILLIAM MICHAEL CASHIN, A.B. (Boston College), Brighton	1963
JOSEPH P. HEALEY, A.B. (Harvard University), M.B.A. (Har- vard Business School), LL.B. (Harvard Law School), Ar- lington	1963
ALDEN CHASE BRETT, B.S., LL.D. (University of Massachusetts), Belmont	1964
ERNEST HOFTYZER, B.S. (Ohio State University), Marion	1964
J. JOHN FOX, LL.B. (Boston University), Boston	1965
MISS VICTORIA SCHUCK, A.B., M.A., PH.D. (Stanford University), South Hadley	1965
DENNIS MICHAEL CROWLEY, B.S., M.S. (University of Massa- chusetts), LL.B. (Boston College), Boston	1966
MRS. KATHRYN FORAN FURCOLO (Elmira College), (Northeast- ern Law School), Chestnut Hill	1966
FRANK LEAROYD BOYDEN, A.B., A.M. (Amherst College), A.M. (Williams College, Yale University), sc.D. (Colgate Univer- sity), PH.D. (New York State College for Teachers), LL.D. (Wesleyan University, Bowdoin College, Kenyon College, Harvard University, University of Massachusetts), L.H.D. (Amherst College, Williams College, Princeton University), LITT.D. (Tufts College), Deerfield	1967
GEORGE L. PUMPHRET, Dorchester	1967

Members Ex Officio

HIS EXCELLENCY JOHN A. VOLPE, D. ENG. (Northeastern University),
L.H.D. (St. Michael's College), Boston, *Governor of the Commonwealth.*

JOHN WILLIAM LEDERLE, A.B., A.M., LL.B., PH.D. (University of Michigan), *President of the University.*

OWEN B. KIERNAN, B.S. (Bridgewater State Teachers College), ED.M. (Boston University), ED.D. (Harvard University), *Commissioner of Education.*

CHARLES HENRY McNAMARA, *Commissioner of Agriculture.*

Officers of the Board

HIS EXCELLENCY JOHN A. VOLPE, D. ENG. (Northeastern University),
L.H.D. (St. Michael's College), Boston, *Governor of the Commonwealth.*

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KENNETH WILLIAM JOHNSON, B.S. (University of Vermont), Amherst, *Treasurer.*

General Information

THE UNIVERSITY OF MASSACHUSETTS is the state university of the Commonwealth, founded in 1863 under provisions of the Morrill Land Grant Act passed by the United States Congress one year earlier.

Presently preparing for the observance of its Centennial, the University is a member of the great community of Land Grant colleges and state universities serving the nation as principal resources of higher education for the country's citizenry. Incorporated as the Massachusetts Agricultural College in April, 1863, the institution was formally opened to a handful of students in 1867. Rooted in the liberal arts tradition (its early presidents were graduates of such colleges as Dartmouth, Williams, Amherst, and Harvard), it has grown steadily from the four teachers and four wooden structures available for its opening session. Reflecting the broadening interests of its students, the General Court of Massachusetts authorized a second name, Massachusetts State College, in April, 1931. Sixteen years later, in May, 1947, the institution became the University of Massachusetts.

Situated in one of the most picturesque sections of the state, the University joins with its academic neighbors—Amherst, Smith, and Mount Holyoke Colleges—in maintaining the rich tradition of educational and cultural activity associated with this Connecticut Valley region. The University's central campus consists of approximately 700 acres of land and 80 buildings. Physical growth has been carefully planned, with provisions for additional buildings and facilities to accommodate an enrollment of approximately 10,000 students within the next decade. Offering a comprehensive program of instruction and research, the University is thus the Commonwealth's major resource of public higher education dedicated to the preservation and continued development of the country's free institutions.

BRANCHES OF INSTRUCTION

The Undergraduate College

The University offers four-year undergraduate instruction leading to the following degrees: Bachelor of Science, Bachelor of Arts, Bachelor of Science in Chemical, Civil, Electrical and Mechanical Engineering, Bachelor of Business Administration and Bachelor of Vocational Agriculture.

GENERAL INFORMATION

This instruction is assigned to the College of Arts and Sciences, the College of Agriculture, the Schools of Business Administration, Education, Engineering, Home Economics, Nursing and Physical Education. The aim of the four-year course is to give as high a degree of proficiency in some particular branch of learning as is possible without sacrificing the breadth, knowledge, and training which should characterize a well-rounded college education.

The Bachelor of Arts degree is conferred upon those candidates who fulfill the requirements for this degree specified by the College of Arts and Sciences and the School of Education. The Bachelor of Science degree is conferred upon those candidates who fulfill the requirements for this degree in the College of Arts and Sciences, the College of Agriculture, the Schools of Home Economics, Nursing, and Physical Education. All graduates from the School of Engineering receive the appropriate degrees of Bachelor of Science in Chemical Engineering, Civil Engineering, Electrical Engineering or Mechanical Engineering. All graduates from the School of Business Administration receive the degree of Bachelor of Business Administration.

Special arrangements are made for some graduates of county agricultural schools and of agricultural departments of certain high schools to complete the college course with majors in agriculture or horticulture. Upon the completion of their course they are granted a Bachelor of Vocational Agriculture degree.

The Graduate School

Graduate work leading to the Doctor of Philosophy degree may be taken in the following fields: Agronomy, Animal Science, Bacteriology, Botany, Chemistry, Economics, Entomology, Food Sciences, Food Technology, Government, Plant Pathology, Poultry Science, Psychology, and Zoology.

A cooperative Ph.D. program involving Amherst, Mount Holyoke and Smith Colleges and the University of Massachusetts is also available in the biological sciences and in chemistry.

The following departments offer major work leading to a Master's degree: Agricultural Economics, Agricultural Engineering, Agronomy, Bacteriology, Botany, Business Administration, Chemistry, Chemical Engineering, Civil Engineering, Dairy and Animal Science, Economics, Education, Electrical Engineering, English, Entomology and Plant Pathology, Floriculture, Food Technology, Forestry, Geology, German, Government, History, Home Economics, Horticulture, Landscape Architecture, Mathematics, Mechanical Engineering, Olericulture, Philosophy, Physics, Pomology, Poultry Science, Psychology, Public Health, Romance Languages, Sociology, Wildlife Management, Zoology.

GENERAL INFORMATION

The general requirements of the Graduate School regarding admission, residence, credits, tuition, etc., together with specific information concerning details of interest to prospective students, are outlined in a separate bulletin, which may be obtained upon request from the Dean of the Graduate School.

Summer Sessions

An expanded summer program enables the student to earn nearly the equivalent of a full semester's work. The sessions are open to freshmen who wish to begin their college education immediately following graduation from high school. The program also serves the needs of students currently enrolled in colleges; graduate students; and professional workers seeking courses in specialized fields. A bulletin describing the entire summer program is available from the Director of the Summer Sessions.

The Stockbridge School of Agriculture

The University, through the Stockbridge School of Agriculture, provides a complete non-degree program of two-year technical and vocational courses in the fields of agriculture, horticulture and related fields.

This School was organized at the University in 1918 under the name of "The Two-Year Course in Practical Agriculture." Its purpose was to meet the demand for shorter courses in agriculture which might be taken by high school graduates who could not satisfy college entrance requirements or who were unable to take the four-year college course. In 1928 the School was given its present name in honor of Levi Stockbridge, first professor of agriculture at the University and its fifth president.

Men and women are trained primarily for the practice of farming or for jobs in associated agricultural industries. A diploma is awarded for satisfactory completion of the course.

As the two-year program is now organized, a student may choose any one of 12 vocational courses, including Animal Science, Arboriculture, Dairy Technology, Floriculture, Food Distribution, Food Management, Forestry, Fruit Growing, Landscape Operations, Poultry Science, Turf Maintenance and Vegetable Crops.

On-the-job placement training is required of all first-year students following the second semester for a period of three to five months, depending on type of employment. Wages earned can pay a large part of second-year expenses if the student is forced to economize.

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Limited enrollment quotas in each major course make necessary early filing of application. No formal entrance examinations are required for non-degree short courses.

A catalogue, giving complete description of all two-year courses offered in The Stockbridge School of Agriculture, as well as full details on estimated costs, employment opportunities in each field, and entrance arrangements is available. An application form is printed in the catalogue. Write to Director of The Stockbridge School, University of Massachusetts, Amherst.

Other Non-Degree Short Courses

Other short courses, varying in length from one to ten weeks, furnish supplementary training for city and town sanitary inspectors, tree wardens and city foresters, golf course greenskeepers, and skilled workers in dairy and ice cream plants. A certificate is presented upon the satisfactory completion of the course.

Research and Regulatory Services

The University of Massachusetts serves the fields of agriculture and horticulture through its Experiment Station, which provides research and regulatory services. Experiment stations were established in all states as the need for development of practical information on subjects relating to agriculture became apparent. Through the efforts of experiment stations, a fund of scientific knowledge applicable to agriculture and horticulture has been accumulated, and research workers in the experiment stations continue to contribute this knowledge by constant research and experimentation.

At the University of Massachusetts, the Experiment Station service has expanded until it now deals with problems in the following fields of specialization: Agricultural Economics and Farm Management, Agronomy, Bacteriology, Chemistry, Dairy and Animal Science, Engineering, Entomology and Plant Pathology, Floriculture, Food Distribution, Food Technology, Forestry, Nutrition, Olericulture, Pomology, Poultry Science, and Veterinary Science. Most of the research activities at the University of Massachusetts are undertaken at the main Experiment Station at Amherst. There are, however, two substations, one at Waltham, devoted largely to the problems of horticulture as applied to olericulture, floriculture, and nurseryculture, and one at East Wareham, where attempts are in progress to solve the problems of the cranberry and blueberry growers.

GENERAL INFORMATION

In addition to the work described above, the administration of certain regulatory services, pertaining to the sale of feeds, fertilizers, and seeds and to the use of dairy glassware, is also assigned to the Experiment Station which is equipped with the necessary laboratory facilities and personnel for that purpose.

Cooperative Extension Service

The Massachusetts Extension Service conducts educational programs for adults and off-campus youth (4-H) in agriculture and home economics. These programs help people apply scientific and research information in reaching solutions to their problems. Programs are conducted with farm production, food processing, food distribution and other types of agricultural business, with homemakers and with other groups interested in family living, the development of youth, use of agricultural resources, and our rural communities.

The Extension Service is a cooperative teaching effort between the United States Department of Agriculture, University of Massachusetts and the several counties of the state. Many staff members in a wide range of fields at the University of Massachusetts participate in Extension education, as well as research and resident teaching. County Extension workers cooperate with University personnel in planning and conducting the work. A variety of educational techniques and communications media are used.

ADMISSION

Applications for admission may be obtained by writing the Registrar of the University. Candidates are advised to file their applications early in the senior year and certainly not later than March 1 of the year they plan to enter.

Qualified applicants are admitted at the beginning of the fall and spring semesters and at the beginning of the ten weeks summer session. Since there are many more qualified applicants than can be admitted, however, preference has to be given to those with the highest ratings.

All applicants for admission except veterans and candidates for the Bachelor of Vocational Agriculture degree must take the Scholastic Aptitude Test given by the College Entrance Examination Board. In addition, the University reserves the right to require three Achievement Tests administered by the same Board if the applicant's scholastic record includes several subjects below the college recommending grade of the school. Each applicant will be informed of the procedure he must follow at the time his application is acknowledged.

Methods

A. *High School Seniors*

High school seniors are advised to file their applications early in the senior year. The Scholastic Aptitude Test may be taken on any of the scheduled dates. The January date is recommended except for those applying for early acceptance. The May date is usually too late for seniors, but is appropriate for juniors taking the test for guidance purposes.

Some applicants have a definite first preference for the University and have records that deserve early consideration. Such applicants will be accepted early in their senior year under the following conditions. They must be taking the usual college preparatory course in high school and maintaining the college recommending grade of the school in all of their courses. They must take the College Board Scholastic Aptitude Test in the junior year, preferably in May, and make a score satisfactory to the University. They must indicate the University as their first preference.

Under these conditions the University will be glad to accept such students as indication of excellent achievement in high school and to reduce some of the anxiety that an applicant feels during

ADMISSION

the senior year while waiting for action usually taken in the spring. In this way, too, the burden of multiple applications on high school principals and college admissions officers may be lessened.

B. *High Ranking High School Juniors*

Applicants who have completed with very high academic standing work through the junior year may be admitted to the University for the semester following the junior year. Such applicants must take the Scholastic Aptitude and three achievement tests given by the College Board in May of the junior year and make scores satisfactory to the University. They must be highly recommended by their high school principal. The maturity and social adjustment of the applicant will be considered along with his intellectual development. Such applicants should apply before the end of the junior year.

C. *Veterans*

Veterans are not required to take the Scholastic Aptitude Test. Instead, they must take entrance examinations in algebra, English and a College Qualification Test. These are administered by the University Testing Service in January, June and August. Information in regard to these tests will be furnished the veteran at the time he files his application for admission. "Six Months Active Duty for Training" students are not considered veterans. They must take the College Board Scholastic Aptitude Test rather than the Veterans' Examinations.

D. *Bachelor of Vocational Agriculture Degree*

Superior graduates of vocational schools of agriculture in Massachusetts and vocational agricultural departments in Massachusetts high schools may be accepted for the Degree of Bachelor of Vocational Agriculture, provided:

- a. They are unqualifiedly recommended by the Vocational Division of the Department of Education as *bona fide* Vocational Graduates with superior ranks; and
- b. That they can present at least 16 units of certified entrance credits, approved as to quality and quantity by the State Department of Vocational Education; and
- c. That they successfully pass the English and College Qualification Test administered by the University Guidance Office. Those who have had algebra will be required to include the algebra examination.

ADMISSION

E. *Transfer*

A limited number of transfers from approved colleges may be admitted. Since applicants for such transfer exceed the number that can be admitted, they are placed on a competitive basis. Ratings will be based upon high school and college records and on the College Board Scholastic Aptitude Test, which is required of all transfers. The University reserves the right to require the College Board Achievement Tests also, if the applicant's records make such advisable. Information in regard to transfer may be obtained by writing the Registrar.

At least 45 semester credits taken in residence at the University are required of all transfers who are candidates for the Bachelor's Degree.

Subject Requirements

The subjects of preparatory study required for admission call for the satisfactory completion of a four-year high school course or its equivalent and are stated in terms of units. A unit is the equivalent of at least four recitations a week for a school year. High school graduation alone is not sufficient. The applicant's record must indicate capacity for handling the quality of scholastic work which the University has established as its standard of achievement.

Sixteen units of secondary school work must be offered, selected according to the following requirements:

College Preparatory Mathematics	3*
English	4
Foreign Language (2 years of 1 language)	2
U. S. History	1
Laboratory Science	1

The remaining units are elective and may be selected from the following subject matter:

- a. Mathematics
- b. Science
- c. Foreign Language
- d. History and Social Studies
- e. Free electives (not more than four units)

Free elective subjects are those not included in groups a-d, as for example: Music, art, drawing, typewriting, aeronautics, agriculture, home economics, etc. Such free electives are allowed in order that the student who wishes may have some opportunity to elect other high school offerings, while at the same time covering the fundamental requirements for college work.

* Preferably two years of Algebra and one of Plane Geometry.

ADMISSION

Students planning to major in the physical sciences and mathematics should, if possible, offer two years of algebra, one of plane geometry, and one-half year of trigonometry. Analytical or solid geometry, chemistry, and physics are also strongly recommended.

Students planning to pursue an engineering curriculum should offer two years of algebra, one of plane geometry, and one-half year each of trigonometry and solid geometry. Chemistry and physics are also advised. Those deficient in the mathematics should plan to cover it during the summer prior to entrance or expect to take five years to complete the college course.

In high schools organizing agricultural club work under the supervision and rules of the Junior Extension Service of the University, one credit is granted for each full year of work approved by state leaders.

Candidates of exceptional ability and promise may be considered for admission even though some of the prescribed courses were not included in their high school program.

College Entrance Examination Board Advanced Placement

Successful completion in secondary school of courses approved by the College Entrance Examination Board Advanced Placement Program, or the equivalent as approved by the University, will be regarded as meeting the equivalent requirement and will be accorded credit toward graduation.

Physical Examination

Physical examination by their local doctor is required of all entering freshmen, re-entering students and all students participating in athletics. Physical report forms for this examination will be mailed to each student with the bill for the first semester and must be completed and returned to the University Health Service 10 days before the opening of the semester. Evidence of a *successful* smallpox vaccination is required.

Veterans' Affairs

The Veterans' Coordinator is a member of the Placement Service. Veterans enrolling for the first time must file a Certificate of Eligibility with the Placement Office prior to or at registration. All veterans should clear their affairs through the Placement Service.

EXPENSES

University Fees

Expenses vary from approximately \$1000 to \$1200 per year for the normally economical student. First year costs are usually greater than those of the other three years and there is less opportunity to earn. A student is advised to have a definite plan for meeting the expenses of the first year before entering.

Freshmen entering the School of Engineering should be prepared to meet an expense of approximately \$45 for drawing equipment and a slide rule.

The following estimate of a year's expenses, based upon last year's costs, includes only those items which are strictly college and does not include amounts for clothing, laundry, travel, etc. These costs vary slightly from year to year. Tuition for residents of Massachusetts is \$200 per year and for others \$600.

	<i>Normal</i>
Tuition (citizens of Massachusetts)	\$200.00
Room in college dormitory or private home (approx.)	200.00
Board at college Dining Halls (approx.)	420.00*
Athletic Fee	30.00
Student Union Fee	20.00
Student Tax (approx.)	24.00
Student Health Fee	30.00
Student Health Insurance, 12 months' coverage (optional)	18.00
Books, stationery, and other supplies (estimate)	100.00
	\$1042.00

Initial Payment for Freshmen

The initial payment for first semester expenses required of freshmen at the time of fall registration is indicated below and is made up of the following items:

Tuition (citizens of Massachusetts)	\$100.00
Room rent in college dormitories (approx.)	100.00
Board at college Dining Halls (approx.)	210.00*
Athletic Fee	15.00
Student Tax (approx.)	12.00
Student Union Fee	10.00
Military Uniform Deposit (men only)	30.00
Physical Education Equipment Fee (men only)	10.00
Student Health Fee	15.00
Student Health Insurance, 12 months' coverage (optional)	18.00
Books, stationery, and other supplies (estimate)	60.00
	\$580.00

* Above plan for 7 days; 5-day plan available for approximately \$340.00 per year or \$170.00 per semester.

EXPENSES

The above are only approximate figures. A bill will be rendered to the parent of each student prior to the opening of the University.

Tuition

As a state institution the University of Massachusetts offers a low rate of tuition to all students entering from the Commonwealth. Eligibility for admission under the low residential rate is determined in accordance with the following policy established by the Board of Trustees.

A student must present evidence satisfactory to the Treasurer of the University that his domicile is in the Commonwealth of Massachusetts in order to be considered eligible to register in the University as a resident student. This means that he must have established a *bona fide* residence in the Commonwealth with the intention of continuing to maintain it as such.

The domicile of a minor shall follow that of the parents unless such minor has been emancipated. In case of emancipation the student, in addition to the requirements of these regulations, respecting residence, shall present satisfactory proof respecting emancipation. Minors under guardianship shall be required to present, in addition to the certification of the domicile of the guardian, satisfactory documentary evidence of the appointment of the guardian.

No student shall be considered to have gained residence by reason of his attendance in the University nor shall a student lose residential preference during his continuous attendance at the University.

The residence of a wife shall follow that of the husband.

The prescribed form of application for classification as to residence status must be executed by each student. Misrepresentation of facts in order to evade the payment of out-of-state tuition shall be considered sufficient cause for suspension or permanent exclusion from the University.

Discretion to adjust individual cases within the spirit of these rules is lodged with the President of the University.

Board

The University provides three dining halls for students at Butterfield House, Greenough House and University Dining Commons. The dining halls at Butterfield and Greenough dormitories are intended primarily to provide for students housed in that area, including residents of Chadbourne, Mills and Brooks Houses.

All freshmen, sophomores and juniors residing in University dormitories will be required to board at University dining halls,

EXPENSES

except that such students who are members of fraternities or sororities are permitted to board at their respective fraternities or sororities.

Any student who wishes may board at University dining halls on the ticket plan or cash basis.

Military Uniform

All freshmen students taking military drill are required to make a deposit of \$30 for the uniform at the time the first semester bill is paid. Charges for loss or damage of the government issued uniforms will be deducted from this deposit. Should the amount on deposit drop below \$20, because of charges, the student will be required to make additional deposit to restore the balance to \$30. The deposit will be refunded to the student less any charges after clearance from the Air Force or the Army after the student has completed the requirements of the basic course, has been excused from the course or has left the University.

Student Activity Tax

This tax, authorized by vote of the undergraduate students with the approval of the Board of Trustees, provides each student with the *Collegian*, the student newspaper; *Index*, University yearbook; student government, class and other activities.

PAYMENTS

Advance Payment

New students will be expected to make an advance payment of \$15 to the Treasurer of the University as soon as they are notified by the Registrar that they are accepted for admission. This will be considered as first payment on registration fee, which will be due at time of matriculation in September. It is not refundable and will be considered as payment for admissions and registration expense if the student does not matriculate.

A Certificate of Residence form furnished by the University must be properly filled out by the parent and the town or city clerk and returned with the \$15 advance payment.

Summer Orientation Fee

Members of the incoming freshman class attending the summer orientation program will pay a non-refundable fee of \$15 to cover the cost of meals, housing, testing and counseling.

When Payments Are Due

In accordance with policy established by the Board of Trustees, all charges for tuition, fees, board, and room rent in University Dormitories are due and payable seven days prior to the date of registration of each semester. Bills will be rendered in advance and payment may best be made by mail. Students may not register until registration charges are paid.

Late Payment and Registration

Any student who does not make payment of his semester charges within the time specified may be required to pay a fine of \$5. Similarly, any student who does not report for registration or pre-registration on the dates specified or fails to complete his pre-registration within the prescribed time may be required to pay a late registration fee of \$5.

Tuition and Fee Refunds

A student who leaves the University for any reason except as specified below before a semester is completed will be granted a refund of tuition and fees in accordance with the following schedule:

Regular Term

- a. Within the first two weeks from the beginning of semester or term—80%
- b. During the third week—60%
- c. During the fourth week—40%
- d. During the fifth week—20%
- e. After the fifth week—no refund

Summer Session

- a. During the first week—60%
- b. During the second week—20%
- c. After the second week—no refund

A student who makes an advance payment and then for any reason does not attend any part of the next semester or term at the University will be given a full refund of tuition and fees. The \$15 advance payment fee required of new students is not refundable.

A student who is involuntarily called into military service before the completion of a semester will be given a pro rata refund of tuition and fees provided that he receives no academic credit for the work of that semester. If academic credit is given, there will be no refund.

A student who is suspended or expelled from the University for disciplinary reasons forfeits all rights to a refund.

FINANCIAL AID

Room Rent Refunds

It is the policy of the University that there will be no refund of prepaid room rent after the semester has commenced except in the case of a student who is involuntarily called to military service and may be granted a refund on a pro rata basis.

A student who has made an advance payment of room rent who fails to attend any part of the next semester or term or does not reside in a dormitory or other housing will be granted a full refund of prepaid room rent.

Board Refunds

Prepaid board will be refunded on a pro rata basis.

Veterans' Information

Veterans who are entering the University for the first time must present a Certificate of Eligibility at registration. This may be obtained from your nearest Veterans Administration office. Board and room fees must be paid in advance whether the veteran is enrolled under the G.I. Bill or not.

Veterans who are transferring to the University of Massachusetts from another institution or who have done summer work at another institution will be required to submit a supplemental Certificate of Eligibility at registration. This may be obtained by applying through the veterans' office at the institution last attended.

FINANCIAL AID

Scholarships, loans, and part-time employment are available for a limited number of needy and deserving students.

A pamphlet on Financial Aid for Students at the University of Massachusetts is available upon request from the Placement Service.

Aid for Freshman Year

Freshmen are eligible for scholarships and part-time employment and may apply for a National Defense Student Loan. A freshman also becomes eligible for assistance from other loan funds after satisfactorily completing one semester of academic work. However, freshmen are advised to have sufficient funds for the beginning semester so that they may concentrate on making satisfactory social and academic adjustment. Scholarship application blanks may be secured from the Placement Service and should be filed by March 15. Part-time employment application forms may be ob-

FINANCIAL AID

tained from the Placement Service and filed after a candidate has been accepted for admission. Unless extreme need prevails, freshmen will not be granted part-time work the first semester. Those allowed to work should plan to spend no more than ten hours per week on such work. (See page 35 for further information on Scholarships and Loans.)

Aid for Upperclassmen

To become eligible for financial assistance or part-time employment, students should file completed financial aid application forms with the Placement Service by June 1 previous to the college year for which assistance is asked.

Aid for Graduates Interested in Farming

The Lotta M. Crabtree Agricultural Funds make available to graduates of the University of Massachusetts funds to be used for farm financing.

The purpose of loans from these funds is to assist meritorious graduates who are without means in establishing themselves in agricultural pursuits. These loans are made without interest or service charges other than the cost of title search and legal papers. They must, however, be paid back in full amount within a reasonable length of time and there are certain restrictions on their use.

Applications for the "Lotta Crabtree Agricultural Fund" should be addressed to the Trustees of the Lotta M. Crabtree Estate, 619 Washington Street, Boston, Massachusetts, or may be secured at the Placement Office at the University. Decisions regarding the granting of a loan rest entirely with the Trustees under the terms of Miss Crabtree's will.

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Freshman Orientation Program

Members of the incoming freshman class are required to attend a summer orientation program of two and a half days. This is a period of testing, counseling and pre-registration. A series of guidance and placement tests will be given and then scored. The student will be assigned to a faculty counselor who will help him select his courses for the fall semester and plan his schedule of hours.

If a student is given advanced placement by a placement examination or by some other means, and if he completes the advanced work (the next course if the courses are in sequence) with a grade of C or better, he will be given credit toward graduation but no grade for the omitted work; if the grade in the advanced work is D, he will be considered to have completed any requirement represented by the omitted work but will not receive credit for the omitted work. Credit with no grade awarded in this manner will be treated as transfer credit in the computation of quality-point averages.

A special program for parents is arranged for the final day of the session at which time they learn about the tests and the results, the student's proposed courses and schedule for fall semester, and the facilities and opportunities at the University.

Enrollment Regulations

A. Pre-Registration

Every student must report for pre-registration on the appointed day. Late pre-registrants will be charged a fee of \$5. A student who does not pre-register is not assured admission into the next semester.

B. Registration

Each student must report for registration on the appointed day. Late registrants must pay a \$5 fine.

C. Course Changes

No course will be recorded on the permanent records of the University nor will a student receive credit for it unless he has registered for such a course in accordance with established procedure on a regularly scheduled registration day or unless his registration shall have been made official by the signature of the Registrar. In the

REGULATIONS

latter case a Program Change Card must be signed by the student's adviser and the Registrar approving the course, and by the instructors of the courses to be dropped and added. No instructor should allow a student to enter his class unless the student was officially enrolled on a regularly scheduled registration day or submits such a Program Change Card authorizing his admission to the class.

A student may not drop a course without the approval of his adviser and the Registrar on a Program Change Card and the release of the instructor. A course dropped without this approval will be recorded as a Failure.

D. Adding or Dropping Courses

No new course may be added to a student's schedule after ten calendar days from the first scheduled class of each semester. A course added without the approval of the adviser and Registrar on a Program Change Card will not receive credit. (Card available in Registrar's Office.)

A student may withdraw from a course without a mark on his record provided that he does so within ten calendar days after the first day of classes in a given semester. A course dropped after this period will receive a mark of F and will be recorded WF (withdrew failing). This grade will be computed in the quality point average. Exceptions to this rule may be made—if approved by the Provost—for health, financial, or other family problems. When such an exception is allowed and a statement is received from the instructor that the student was passing at the time the course was dropped, a WP (withdrew passing) is received. The WP is not computed in the quality point average. A course dropped anytime without the approval of the adviser and the Registrar on a Program Change Card will be recorded as a failure.

The minimum load that can be approved for any student is 12 semester hours. A student is not permitted to withdraw from courses which will bring his total credits below this minimum without permission of the Provost. Such permission is not ordinarily given except for compelling reasons such as protracted illness.

E. Withdrawals

If a student voluntarily withdraws from the University after the announced closing date for submission of mid-semester grades, each course for which he is registered will be recorded on his permanent record as WF or WP in accordance with his standing in the course at the time of formal withdrawals.

F. Credit by Special Examination

The requirements of any course approved for credit may be met by examination upon arrangement with the Dean of the

REGULATIONS

School or College and the head of the department offering the course, provided the student's quality point average is 2.5 or higher. All such arrangements must be completed prior to the mid-semester. No student may earn more than thirty (30) semester hours of credit in this manner.

Advisory System

In order that from the day he enrolls the freshman may have some one to whom he may go for consultation and assistance, each student is assigned to a faculty adviser at the time of registration. It is the function of this adviser to help the student in adjusting himself to the work and life of the University. Academic progress reports issued by the Registrar's Office are sent to the advisers periodically, and the students are expected to report to their advisers from time to time to discuss their academic standing. The University also forwards reports of academic standing to the parents. Both students and parents are encouraged to consult with the adviser whenever there are problems regarding studies or personal adjustments to college life.

In the second semester of the freshman year each student will discuss his vocational and specialization plans with his adviser. If he can decide definitely upon the department in which he wishes to specialize, and the adviser approves, the student takes his election card to the head of that department for approval. In cases where students are not ready to designate a department of specialization they continue as general majors during the sophomore year under the direction of an adviser assigned by the head of the School in which the student is enrolled. Such general majors must select their field of specialization by the end of the sophomore year.

Student Housing

It is the policy of the Board of Trustees that all men and women undergraduate students shall be housed in campus dormitories and be required to eat at University dining halls unless given permission to commute from their parents' home or to live at sorority or fraternity houses. University board is optional for seniors and is available on a cash basis. Sororities and fraternities may furnish regular board to members up to the approved capacity for each house.

Students who are assigned to housing operated by the University are expected to remain in occupancy for the academic year and may not be released sooner except as their places are taken by suitable substitutes.

The University of Massachusetts reserves the right to change room assignments whenever necessary.

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Most dormitory rooms are double and are furnished with beds, mattresses, pillows, desks, chairs, and a chest of drawers. Students care for their own rooms and are responsible for any damage.

Dormitories will be open for occupancy on the day immediately preceding the opening of the University.

All student property must be removed from the rooms and the key turned in immediately after final examinations in June. Such property not removed by the owner will be removed by the University and stored at the owner's expense.

Students assigned to dormitory rooms will be responsible for the room rent of the entire semester. Room rent is not refundable.

Room rental charges do not include the several regular school vacation periods. The University reserves the right to utilize student rooms during vacations for conferences and other groups which meet occasionally on the campus.

Rooms for Women Students

Assignments of rooms in women's dormitories are made by the Office of the Dean of Women. Rooms are available for women students at Arnold, Crabtree, Dwight, Hamlin, Johnson, Knowlton, Leach, Lewis, Mary Lyon, and Thatcher Houses.

Under the supervision of the Dean of Women, life in each dormitory is directed by a council of student leaders, advised by a full time head of residence, so that conditions in the residence halls are conducive to study and good living habits. Through the women's branch of the Student Government, the responsibility is put upon each student to live according to her own best standards as well as according to the standards of the group.

Freshman girls will be assigned rooms in the dormitory and will be notified of the assignment prior to the beginning of college.

In the spring of each year, upperclass women have an opportunity to choose rooms for the coming year.

Only students living in their own homes may commute. Upper-class women may apply to the Dean of Women for permission to live in a sorority house, or to earn room and board in a private home.

Dormitories are maintained for undergraduates; graduate women from other countries are also accommodated whenever possible. The Dean of Women's Office maintains a list of rooms in Amherst available for graduate women students.

Rooms for Men Students

Dormitory rooms are available for male students at Abigail Adams, Baker, Brooks, Butterfield, Chadbourne, Greenough, Hills, Mills, Van Meter, and Wheeler Houses.

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Assignment of dormitory rooms is under the supervision of the Housing Office. Requests for permission to live off campus must be made in writing to the Dean of Men.

A full-time Head of Residence who is a member of the professional staff of the Dean of Men's Office is in charge of each dormitory. While these Heads of Residence are responsible for the enforcement of University rules and regulations, their primary concern is to counsel students. In each dormitory they are assisted by Floor Counselors in maintaining good living and study habits.

Dormitories are governed by an elected Student House Council, advised by the Head of Residence, a procedure which gives the students valuable training in dealing with the problems of group living.

Apartments for Married Students

The University operates 165 apartments for married students and junior faculty. Although it cannot guarantee housing for all married students, every effort will be made to assist in locating housing either on or off campus. Campus housing assignments are under the direction of the Housing Office and all inquiries should be addressed to that office.

Automobiles

Only members of the senior class, students 21 years old or over, and commuters are permitted to have automobiles or other types of automotive equipment on the campus or in the Town of Amherst. Vehicles must be registered with the Campus Police. Driving to and from classes is not permitted. Exceptions may be made in the case of an individual who has a severe physical limitation. Requests for such exceptions must be made through the University Health Service.

GRADING SYSTEM

Enrollment in and graduation from the University involve both quality and quantity of work. The quantity of work is measured by the credits obtained by successful completion of courses. The quality of work is measured by grades. Each grade is equated with a quality point as noted below. The quality point average required for continued enrollment and for graduation is set for each class by the Faculty Senate. A cumulative average of 1.70 is required for graduation for the classes of 1962 and 1963. Beginning with the class of 1964 the graduation requirement is a cumulative average of 1.80.

I. Grades

Grades shall be reported according to the following letter system. No other interpretation of this letter system shall be authorized.

- A — Excellent
- B — Good
- C — Average
- D — Passing (but not satisfactory)
- F — Failure
- Inc— Incomplete

The grade of Incomplete shall be reported:

- A. When a portion of the assigned or required class work has not been completed because of necessary absence of the student, or other reasons equally satisfactory to the instructor. And then only when he considers the work already done to be of passing quality.
- B. When because of serious illness or other cause beyond the control of the student, he is unable to take the final examination. In this case an *Incomplete* is to be given only if the instructor judges that the quality of the student's work is such that by satisfactory performance in the examination he could complete the work of the course with a passing grade. If the student's record is such that he would fail the course regardless of the result of the examination, he is to be given a failure.

A student can obtain credit for an *Incomplete* only by finishing the work of the course before the end of the fourth week of his next semester. A mark of *Incomplete* will be automatically converted to a failure if the course requirement has not been satisfied by this time. The initiative in arranging for the removal of the *Incomplete* rests with the student.

II. Quality Points

- A. Quality points per semester hour will be assigned as follows: A, 4; B, 3; C, 2; D, 1; F, 0.
- B. *Semester Grade Point Average.* To compute the semester grade point average, the total points earned will be divided by the total credits carried. Credits carried are defined as total credits earned and failed. Grade point averages will be recorded to one decimal place. For example, averages from

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2.65 to 2.74 will be recorded as 2.7. At the end of the senior year, the cumulative average will be recorded to two decimal places. A student with an Inc. will not have his semester quality point average computed until these marks have been converted to letters except in those cases where obvious dismissal would be involved regardless of the *Incomplete*.

- C. *Cumulative Average.* To compute the cumulative grade point average, the total points earned will be divided by total credits carried. Total credits carried will be the sum of the total credits earned and failed. A course once passed cannot be repeated for a higher grade.
- D. In computing grade point averages the following will not be included:
 - 1. Required physical education courses of the freshman and sophomore years.
 - 2. Courses for which a student does not receive credit toward a college degree (Mathematics or Foreign Language to satisfy an entrance deficiency).
- E. Only grades earned at the University will be included in computing the Cumulative Quality Point Average.
- F. *Warning.* Any student whose semester quality point average falls below the cumulative quality point average requirement of his class will be warned of his status by the Registrar and informed of the rules governing dismissal. A copy will be sent to his parent.

Change of Major

A student wishing to change his major must get a Major Change Card at the Registrar's Office. This change is to be approved by the head of the Department or School in which he is now majoring and also by his new major adviser. This card, properly indorsed, must be returned to the Registrar's Office before the change receives final approval.

Standards of Conduct

The customary high standard of college men and women in honor, self-respect, and consideration for the rights of others constitutes the ideal of student conduct.

The privileges of the University may be withdrawn from any student at any time if such action is deemed advisable.

It should be understood that the University, acting through its president or any administrative officer designated by him, distinctly

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reserves the right, not only to suspend or dismiss students, but also to name conditions under which they may remain in the institution.

Hazing in the sense of the punishment or humiliation of students is not permitted.

Dismissal

Dismissal from the University for scholastic reasons shall be based upon regulations to be administered by the Committee on Admissions and Records. Changes in these regulations may be made by the Faculty Senate and the University faculty.

Honors

- A. *University Honors Groups.* At the beginning of each semester a list is posted of those students who, during the previous semester, made a semester grade point average of 3.0 or higher. Three groups are recognized as follows:

First Honors	.	.	.	.	.	3.8 or higher
Second Honors	.	.	.	.	.	3.4 to 3.7 inclusive
Third Honors	.	.	.	.	.	3.0 to 3.3 inclusive

- B. *Graduation with Distinction.* High ranking students will be graduated as follows:

Summa Cum Laude—Cumulative average 3.8 or higher.
Magna Cum Laude—Cumulative average 3.4-3.7 inclusive.
Cum Laude—Cumulative average 3.0-3.3 inclusive.

A transfer, to be eligible for consideration for graduation with distinction, must have earned his final 60 semester hours of credit in residence at the University.

Graduation Requirements

All four-year curricula of the University conform to the following basic conditions:

- A. The successful completion of at least 120 semester hours of academic credit. These are exclusive of basic Military and Air Science courses required of men students and the basic physical education courses required of all students. Individual colleges, schools, divisions and departments may require more than 120 semester hours of academic credit.
- B. An introduction to the basic skills of communication by successful completion of English 1 and 2 and Speech 3.

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- C. An introduction to the humanities by the successful completion of English 25 and 26 and of one other semester course of three hours of academic credit chosen from art, English, foreign-language literature, music and philosophy courses.
- D. An introduction to the development of Western culture and of the modern social sciences gained through the successful completion of nine semester hours of credit in courses chosen from the offerings of at least two of the following departments: economics, history, government, psychology, and sociology.
- E. An introduction to mathematics and natural sciences to be achieved by the successful completion of 12 semester hours of credit in courses chosen from the offerings of at least two of the following three broad academic divisions: mathematics, biological sciences and physical sciences.
- F. Intensive or specialized work in a particular department, division, school or college constituting a major and consisting of the successful completion of at least 15 semester hours of credit in junior-senior courses in the area of the major.
- G. It is the policy of the University that the final year's scholastic work be accomplished in residence, which is defined for this purpose as continuous enrollment and regular attendance in classes conducted on the campus of the University. This requirement may be waived by the Board of Admissions and Records upon the recommendations of the major department and Dean of the College or School.

The Board may also waive the requirement for a student admitted to an appropriate professional school after completion of six or more semesters of work at the University, provided:

1. That the cumulative average at the University has been 2.5 or higher.
 2. That satisfactory evidence is presented indicating completion of work comparable to that offered at the University in amount sufficient to satisfy requirements for the appropriate bachelor's degree.
 3. That the major department and Dean of the College or School approve.
- H. No student is allowed more than ten semesters, including semesters at other colleges, to attain the required gradua-

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tion average. Twelve semester credits earned in summer schools at the University or other colleges constitute a semester.

A student who has met the required graduation average but is deficient in course requirements may continue for one additional semester (total 11).

Financial Requirements for Graduation

Diplomas, transcripts of record, and letters of honorable dismissal will be withheld from all students who have not paid all bills and all loans due the University. All such bills due the University must be paid ten days preceding Commencement. If paid after that date and the student is otherwise eligible, he may graduate the following year.

Transcripts

Two transcripts of a student's record will be furnished without cost. For each additional copy there will be a charge of \$1.

SCHOLARSHIPS AND LOANS

Scholarships are awarded only to needy and deserving students of high character whose habits are economical and whose scholastic records are satisfactory; that is, at least a 2.5 quality point average. A limited number of scholarships are available to entering freshmen who have made outstanding records in high school.

Scholarships are paid in installments at the beginning of each semester in the form of a credit on the student's bill. A scholarship may be discontinued at the close of any semester.

If the scholarship student withdraws from the University, any refund of University fees or charges must first be applied to reimburse the scholarship fund for the full amount of the scholarship received by the student for the semester.

Applications for scholarships may be obtained from the Placement Service and must be completed and returned by March 15 to be considered.

GENERAL SCHOLARSHIPS

COMMONWEALTH SCHOLARSHIPS. The Commonwealth of Massachusetts annually provides 25 scholarships of not more than \$250 for members of each of the four undergraduate classes of the University. Upperclass students may obtain application forms from the Placement Service. Entering freshmen may obtain application forms at the Registrar's Office.

ALPHA SIGMA PHI SCHOLARSHIP for needy students.

DANFORTH KEYES BANGS SCHOLARSHIP for the aid of industrious and deserving students.

LUCIUS CLAPP FUND to provide scholarships and loans to deserving students.

FOREIGN STUDENT SCHOLARSHIPS. A limited number of scholarships, involving waiver of tuition fees only, awarded on the basis of merit and need. Applications should be addressed to the Adviser to Foreign Students.

HENRY GASSETT SCHOLARSHIP for a worthy undergraduate student.

CHARLES A. GLEASON SCHOLARSHIPS. General scholarship for worthy students.

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WHITING STREET SCHOLARSHIP. Scholarships of \$50 each for deserving students.

UNIVERSITY ASSOCIATE ALUMNI SCHOLARSHIPS. A limited number of scholarships awarded on the basis of leadership, need, scholarship and participation in extra-curricular activities.

UNIVERSITY FOUNDATION SCHOLARSHIPS. A limited number awarded to needy scholars.

UNIVERSITY SCHOLARSHIPS. Scholarships ranging in value from \$50 to \$500 awarded to needy scholars in all the colleges, schools, and divisions except Agriculture.

RESTRICTED SCHOLARSHIPS

GEORGE H. BARBER SCHOLARSHIP AND GRANT-IN-AID AWARDS. A limited number of scholarships or grants-in-aid based on evidence of outstanding athletic performance and good citizenship, need or high scholarship.

CLASS OF 1882 SCHOLARSHIP for the aid of a worthy student of the junior or senior class.

FREDERICK G. CRANE SCHOLARSHIPS for the aid of worthy undergraduate students, preference given to residents of Berkshire County.

INTERFRATERNITY COUNCIL SCHOLARSHIP. A \$100 scholarship awarded annually to a member of one of the social fraternities. The recipient must show evidence of need. In addition he must have a record of participation in extra-curricular activities and have at least a 2.5 quality point average.

NATIONAL FOOD BROKERS ASSOCIATION SCHOLARSHIP. \$250 to be awarded to either an undergraduate or graduate student who is interested in making a career in the food industry.

BETSEY C. PINKERTON SCHOLARSHIPS. Two general scholarships for graduates of the schools of the city of Worcester.

SIGMA XI SCHOLARSHIP AWARD. The Massachusetts Chapter of the Society of the Sigma Xi makes an award of \$100 annually to an undergraduate student at the University in recognition of a developing research interest in the sciences or engineering.

WILBUR H. H. WARD SCHOLARSHIPS. Twenty-five scholarships of approximately \$100, known as the Wilbur H. H. Ward Scholarships. The Ward Fund is administered by a Board of Trustees independent of the University. Applicants for these scholarships write to Allen S. Leland, Stockbridge Hall, University of Massachusetts, Amherst. They are available to Hampshire County Men.

SCHOLARSHIPS

College of Agriculture

ALVORD. For students specializing in the study of dairy husbandry or dairy manufacturing with the intention of becoming an investigator, teacher, or special practitioner in the dairy industry. Restricted to students who do not use tobacco or fermented beverages.

O. G. ANDERSON MEMORIAL FUND. For needy and worthy students majoring in pomology. To be used for the purchase of books and supplies. Granted only on the recommendation of the Department of Pomology.

ASCENSION FARM. For men students in the College of Agriculture. Residents of Berkshire County have preference, but awards may be made to students from Hampshire, Hampden, and Franklin Counties.

BORDEN. One scholarship of \$300 to be awarded to a senior in the College of Agriculture who has the highest scholarship average in all work through the Junior year and who has completed two or more courses in dairying.

BOSTON MARKET GARDENERS' ASSOCIATION. A \$100 scholarship for a Sophomore in agriculture. Applications should be made to the Secretary of the Boston Market Gardeners' Association, 240 Beaver Street, Waltham 54, Mass.

BOSTON STEWARDS CLUB. Two or three \$500 scholarships to students majoring in Food Management. Awards are made on basis of both financial need and scholastic attainment.

BUTTRICK. For junior, senior or graduate students majoring in Dairy Industry or Food Technology. Scholarships will range from \$100 to \$500 per year depending upon scholarship achievement and need.

H. B. CANTOR FOUNDATION SCHOLARSHIP. A \$500 scholarship for students majoring in hotel and food management. Students must be recommended by the University Scholarship Committee. This scholarship may be awarded to either a four-year or a Stockbridge School of Agriculture student.

CHARLES M. COX TRUST FUND SCHOLARSHIP of \$300 is awarded to a student or students in the College of Agriculture on the basis of need, character and scholarship ability. Preferably the scholarships will be awarded to undergraduate majors in dairy husbandry or poultry husbandry.

LOTTA CRABTREE. For students in the College of Agriculture. Based on scholarship and need.

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Esso. Scholarships are based on membership in 4-H Club, and applications should be sent to County 4-H Club Agents. Scholarship is for \$400 (\$100 per year) for students enrolled in courses of agriculture.

J. W. D. FRENCH FUND. For students in dairy and forestry, and allied subjects.

CHARLES H. HOOD FOUNDATION. Awarded to two juniors and two seniors in the College of Agriculture, with preference given to those studying the production of milk. Based on scholastic standing, character, industry, and personality.

MASSACHUSETTS FLOWER GROWERS' ASSOCIATION SCHOLARSHIPS. Two \$200 scholarships awarded to qualified juniors or seniors majoring in Floriculture.

MARGARET MOTLEY. For a woman student majoring in Floriculture or Landscape Gardening. Need, scholarship, and promise of success from the basis of the award which is provided by the Garden Club Federation of Massachusetts, Inc.

PORTER L. NEWTON. For students majoring in Agriculture who are residents of Middlesex County.

FRANK H. PLUMB. For students majoring in the College of Agriculture.

V. A. RICE SCHOLARSHIP FUND. A \$100 scholarship for a worthy student majoring in Animal Husbandry.

SEARS, ROEBUCK FOUNDATION. Four scholarships for outstanding freshmen in the College of Agriculture, based on scholarship, leadership, personality, business ability, or special achievement. The outstanding freshman recipient is eligible for a special sophomore scholarship.

SPRINGFIELD GARDEN CLUB. For students living in the vicinity of Springfield, Mass. and majoring in some phase of Horticulture.

ELLSWORTH MILTON STATLER FOUNDATION SCHOLARSHIPS. Two \$500 scholarships for students majoring in Hotel and Food Management. Students must be recommended by the University Scholarship Committee and approved by a Committee of the Statler Foundation. These scholarships may be awarded to either four year or Stockbridge students.

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School of Engineering Scholarships

ALUMNI SCHOLARSHIPS. Provided by annual contributions from graduates and friends of the School of Engineering to provide scholarships to deserving and well-qualified students pursuing work in a major field of engineering. They are available to freshmen and upperclassmen.

KOLLMORGEN OPTICAL CORPORATION TUITION SCHOLARSHIP. Awarded annually to a junior or senior student majoring in Mechanical Engineering. Awarded on the basis of need and superior scholastic attainment.

WESTERN MASSACHUSETTS SECTION, AMERICAN SOCIETY OF MECHANICAL ENGINEERS SCHOLARSHIP. Awarded annually to a junior or senior mechanical engineering student who is a legal resident of the area represented by the section. Awarded on the basis of need and scholastic attainment.

Military Scholarships

UNITED STATES ARMY ROTC SCHOLARSHIP. The U. S. Army Reserve Officers Training Corps offers one or more scholarships of \$150 to selected members of ROTC.

College of Arts and Sciences

STEPHEN DAVIS SCHOLARSHIP. Established by gift of Mr. and Mrs. Benjamin Davis of New York City in memory of their son, Stephen Davis, class of 1954, who lost his life while serving as an officer with the United States Air Force. For a male undergraduate majoring in liberal arts or social sciences who has participated in the athletic program. The selection of the recipient is made jointly by the Dean of the College of Arts and Sciences and by the Head of the School of Physical Education. The student selected receives each year, not to exceed four years, the full income from the fund so long as he remains in good standing in the University and continues to major in Liberal Arts or the Social Sciences. Annual income is approximately \$800.

RICHARD W. FESSENDEN MEMORIAL SCHOLARSHIP. An award made to undergraduate students majoring in chemistry upon the recommendation of the department of chemistry. This award is made possible by donations from friends and former students of Dr. Fessenden, former professor of chemistry at the University.

MASSACHUSETTS CITY MANAGERS' ASSOCIATION SCHOLARSHIP. Tuition scholarship awarded by committee composed of the President of the City Managers' Association, the head of the department of government and the Director of the Bureau of Government Re-

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seach, to an undergraduate or graduate student majoring in government.

Public Health Scholarships

MASSACHUSETTS DEPARTMENT OF PUBLIC HEALTH SCHOLARSHIP. A scholarship in the amount of \$300 made to an outstanding student in the field of bacteriology and public health.

MASSACHUSETTS ASSOCIATION OF SANITARIANS SCHOLARSHIP. A scholarship in the amount of \$100 made to an outstanding student interested in the general field of public health.

MASSACHUSETTS MILK INSPECTORS' ASSOCIATION. One or more scholarships, each in the amount of \$100, made to outstanding students interested in the field of sanitation or milk sanitation.

School of Home Economics

BERKSHIRE COUNTY WOMEN'S ADVISORY COUNCIL SCHOLARSHIP. For a home economics student who is a resident of Berkshire County, and who indicates an intention of pursuing a career in home economics.

MINNIE R. DWIGHT SCHOLARSHIP. For a student majoring in Home Economics who is a resident of Hampden County. This scholarship is for \$400—\$50 each semester for four years if scholarship is maintained.

MRS. CLIFTON JOHNSON SCHOLARSHIP. For one or more Home Economics students who are residents of Hampshire County. Preference may be given to applicants who have indicated an interest in Extension work as a career.

HELEN KNOWLTON AWARD AND SCHOLARSHIPS. The award is for the highest ranking senior home economics student. Scholarships are for other deserving home economics students.

MASSACHUSETTS HOME DEMONSTRATION SCHOLARSHIP. For a home economics student at Framingham State Teachers College or the University of Massachusetts.

SEARS, ROEBUCK SCHOLARSHIPS. For two freshmen students entering the School of Home Economics from small town or rural high schools, and preferably those who have indicated an interest in Extension work.

HELEN A. WHITTIER AWARD. For a senior home economics student selected on basis of scholarship, need and character.

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4-H Scholarships

COTTING MEMORIAL SCHOLARSHIP. All college expenses of freshman year—for a woman student. Recipient of this scholarship is selected by a committee of the New England Branch of the Farm and Garden Association from among candidates proposed by State Leaders of 4-H Club work in the New England states.

ESSO SCHOLARSHIP. This scholarship of \$800 is awarded to a freshman enrolled in the College of Agriculture. The recipient receives \$200 during each of the four years he is enrolled. Applications for this scholarship must be submitted to the State 4-H Club Leader.

GEORGE L. FARLEY SCHOLARSHIPS. The Massachusetts Society for Promoting Agriculture has established a scholarship in memory of George L. Farley. The income of approximately \$60 per semester is awarded to deserving 4-H Club members, men or women, recommended by the State Leader of 4-H Clubs from applications submitted by County 4-H Club Agents.

FARM BUREAU SCHOLARSHIP. The Massachusetts Farm Bureau is sponsor of a scholarship awarded yearly to a Massachusetts farm boy or girl as a means of assisting him or her to obtain a college education.

Scholarships for Women Students Only

CHI OMEGA AWARD. The local chapter of the Chi Omega Sorority offers an annual scholarship of \$25 to a woman student majoring in the department of economics or psychology who has the highest scholastic average at the end of the first semester of the senior year.

GREATER SPRINGFIELD PANHELLENIC ASSOCIATION AWARD. This award is given each spring for use in the sophomore, junior, or senior year to a woman student from Western Massachusetts. The award is based on scholarship and need, character and evidence of leadership in campus activities.

POLISH JUNIOR LEAGUE SCHOLARSHIP. An award by the Polish Junior League to a woman student of Polish descent, at the end of her junior year, paying full tuition for the senior year. The basis of this award is character and scholastic achievement.

LOANS

Through the generosity of friends of the University, funds have been donated to provide loans for a limited number of students of the three upper classes to assist in paying tuition or other college

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expenses. These loans are granted, after proper consideration, to needy students of good scholarship whose habits are economical. All loans are secured by a note endorsed by a responsible party as collateral. In general, loans must be paid before graduation. Upon withdrawal from the University, loans automatically become due. On most of the funds, interest is charged at the rate of 3% to maturity and 5% thereafter. The Lotta Crabtree Agricultural Fund loans are made without interest. Application for loans should be made to the Placement Service, South College. No loan under this plan will be granted in excess of \$200 in any one year.

If funds are available at the beginning of the second semester, loans may be made in exceptional cases to members of the freshman class whose scholastic record is satisfactory and whose budget calculations have been upset through circumstances beyond their control.

Higher Education Loan Plan

Loans up to \$500 per year may also be obtained by students in the three upper classes from the bank of their choice through the Higher Education Loan Plan. Certification of attendance and other information relative to the student's overall record will be submitted to the bank prior to receipt of the loan. Further information can be obtained in the Placement Service.

National Defense Student Loan Program

Students may borrow up to \$1000 per year under this program. Interest at 3% starts one year after completion of the program and is repayable within 10 years. Special consideration in the granting of these loans is given to needy students of superior scholarship who are majoring in engineering or a physical science, studying a modern foreign language, or planning to teach in a public school. Because of the small amount of money available, this is necessarily a limited, selective program. Further information and application forms may be secured from the Placement Service.

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University Library

The University Library now consists of the Goodell Library built in 1935 together with a new library addition of seven floors completed in September 1959 which is twice the size of the original library building. The library complex will provide space for the future expansion of the book collection to 460,000 volumes. Seating capacity is provided for 1350 readers and includes special study areas and reading rooms.

The present book collection numbers 228,450 volumes in the University Library and the 30 departmental and laboratory libraries. Facilities in the University Library include rooms for reference materials and current periodicals, a rare book room, an extensive microfilm collection, microfilm reading units, a map room, an exhibition area, and a typing room for researchers. The University Library is also a depository for the publications of the United States Government as well as the State Agricultural Experiment Stations.

Hampshire Inter-Library Center

The University Library is a participating member of the Hampshire Inter-Library Center, a cooperative facility for the acquisition, storage and servicing of research materials, especially journals, documents and reference sets. Incorporated in 1951 to augment library resources in the area, HILC is jointly operated by the four Connecticut Valley colleges—Amherst, Mount Holyoke, Smith, and the University of Massachusetts. The collection now numbers about 18,000 volumes. It is located on the second level of the new addition to the University Library.

Religious Activities

The University is concerned in an age of anxiety with the needs for spiritual undergirdings for the educated man. In this day of uncertainty, such concern for the affairs of the spirit has an equal prominence with searching for scientific truths and knowledge in human relations.

The University gives support to the religious life of its students in various ways. It affords the use of University facilities for student groups of all faiths. It cooperates with the official agencies of the three faiths most largely represented at the University by recogniz-

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ing the contributions of their privately supported chaplains and by giving them facilities and privileges for their work.

On the campus, the religious life of Catholic students is enriched by the program of the Newman Club, of which Rev. David J. Power is chaplain and Rev. J. Joseph Quigley is assistant chaplain. Jewish students participate in services and activities sponsored by the B'nai B'rith Hillel Foundation, of which Rabbi Louis Ruchames is the director. Protestant students join in worship and other religious activities planned by the Christian Association, with the guidance of Rev. Albert L. Seely, Protestant chaplain, and Rev. Russell G. Claussen, assistant Protestant chaplain.

Other religious groups such as the Massachusetts Bible Fellowship, the Orthodox Club, the Christian Science Organization, and the Lutheran Club also meet regularly on campus and students interested in their programs are welcome to attend.

The local Protestant and Catholic churches of Amherst provide opportunities for Sunday worship, and Sabbath services for Jewish students on Friday evenings are held at the Student Union. Students are encouraged to attend the services of their respective faiths. Several denominations sponsor active student programs centered in the local churches as well, and students are welcome to attend events and join groups sponsored by the denominations.

Health Service

The Health Service is devoted to the promotion of optimum health among members of the University community. Its concern is for the total health of individuals and groups, as reflected in the need for complete physical, mental and social well-being.

The work of the Health Service in caring for the needs of students will be made more fruitful in the fall of 1961 when headquarters will, for the first time, be located in the new Infirmary. The building will contain an out-patient department with offices and examining facilities for adequate care of ambulatory patients. In addition, there will be 88 beds available for care of students whose needs are best met by hospitalization. X-ray, laboratory, and physiotherapy facilities will be available to help in reducing time lost by students for reasons of health.

Recognition of the specific emotional needs of students in an educational environment has led to the provision of an active psychiatric program. Diagnostic and limited treatment consultations are available as part of the Health Service program. Other consultation services can be arranged as needs arise. Hospitalization for conditions requiring more specialized care than is available in the Infirmary can be arranged at the Cooley Dickinson Hospital in Northampton.

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The Health Service works closely with the School of Physical Education in adapting the facilities of the School to the individual needs of students for restricted or remedial activity. The health status of participants in the athletic program, both intramural and intercollegiate, is under Health Service supervision; and care is always available for any injuries resulting from these activities.

The Health Service also has an active concern for matters of sanitation and safety which affect the health of students, faculty, employees, and visitors. A physician is always on duty at the Infirmary, or on call, to attend emergency needs among families, visitors, and members of conference groups as well as regular members of the University community.

Students are urged to consult a member of the Health Service staff as soon as any indication of a physical or emotional disorder is evident. It is much easier for the staff, and less time-consuming for the student, to rectify minor difficulties before they have become sources of disability.

Students who are under medical supervision prior to entrance are urged to have their physicians write the Health Service, giving reports and instructions in appropriate detail. Every effort is made to continue treatment without interruption. In brief, the Health Service attempts to provide all students with a co-ordinated and comprehensive program of health supervision formerly provided by their family physicians.

Speech and Hearing Clinic

A Speech and Hearing Clinic is maintained to assist students with speech and hearing problems. Professional services are provided by qualified speech and hearing therapists. Opportunity for assistance is available for students with various problems including stuttering, articulation problems, foreign dialect, voice disorders, and hearing loss. Interested students may contact the Speech Department for an appointment. Appointments will also be made for students recommended by advisors and faculty members. There is no fee for services.

The Placement Service

The University maintains a centralized Placement Service, the main function of which is to assist students to secure part-time or summer positions and permanent employment following graduation.

The University is keenly interested in each graduate's having an

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opportunity to serve effectively in an occupation consistent with his interests, abilities, aptitudes, and education. To assist students in accomplishing their objectives, the following aids are available: cumulative student personnel records, occupational information and industrial literature library, counseling and guidance in job hunting techniques, preparation of credentials and personal data sheets. Also, personal interviews on campus are arranged with prospective employers.

The Placement Service is the clearing center for all part-time jobs at the University. Students are assisted in obtaining part-time work during the college year and full-time work during the summer vacation. Employment is not guaranteed, but every effort is made to help those students who must work to meet their college expenses. In order to give assistance to as many needy students as possible, the maximum financial aid per student is limited to the equivalent of board. The average earnings of students engaged in part-time work is approximately \$150 per year.

The granting of loans, awarding of scholarships, liaison in veterans' affairs and the military draft are also functions of the Placement Service.

Publications and News Office

The University recognizes its obligation to provide the public with accurate information about its educational program. With rising public interest in higher education, news of the University is sought by all communications media, including the daily and weekly press, radio and television.

In addition to providing information through mass media, the Publications and News Office maintains contacts with institutions of higher learning throughout the country through exchange of information in professional journals and publications of educational societies.

Daily training in news writing is provided for a limited number of students who report on University activities and prepare copy for general news releases.

The catalogues describing various phases of the academic program of the University are edited in the Publications and News Office.

Audio-Visual Center

The Audio-Visual Center is organized to help the professional staff through the use of audio-visual materials. The Center has a library of about 1,000 motion picture films; filmstrips; and 2 x 2 slide sets. All major types of audio-visual machines are available

GENERAL SERVICES

for short-term use in classroom teaching. The Center maintains a photographic service for the preparation of technical pictures and 2 x 2 slides. Assistance is available in the preparation of instructional graphic materials, such as charts, graphs, maps and diagrams.

Bureau of Government Research

The Bureau of Government Research was established at the University of Massachusetts in 1955. The Bureau is staffed by professional personnel experienced in local government research. Its work consists of research in governmental problems, publication of studies in public administration, conducting training institutes for public officials, providing consultative services to cities and towns, and the maintenance of a research library.

Alumni Association

The Associate Alumni is the general alumni organization of the University of Massachusetts. The association maintains headquarters at Memorial Hall, erected by alumni and friends in honor of those men of the University who died in World War I.

The association publishes a magazine, *The Massachusetts Alumnus*, as the alumni publication of the University.

According to its by-laws, the corporation is constituted for the purpose of promoting the general usefulness of the University of Massachusetts; of cultivating among its graduates and former students a sentiment of mutual regard; and of strengthening their attachment to their Alma Mater.

Under sponsorship of the University of Massachusetts Building Association, composed of alumni who volunteered their services, 18 dormitories, two faculty apartment centers, and a Student Union Building have been constructed on the campus.

The governing body of the Associate Alumni consists of its officers and a board of directors. Four directors are elected each year and serve a term of four years. All graduating seniors become members of, and contributors to, the association at graduation, according to a tradition set by the Class of 1940.

The Association also publishes a supplementary *Newsletter* for alumni in addition to a quarterly *Newsletter* for parents.

The Student Union

The Student Union is the community center for all members of the University family—students, faculty, administration, alumni, and guests. It is not just a building: it is an organization and a

GENERAL SERVICES

program which together constitute a well-defined plan for a fruitful community life on campus.

Constructed in 1957 by the University of Massachusetts Building Association, the Union is the center not only of major social activities, but also of many other organized endeavors forming an important adjunct program in the general educational process of the University as a whole.

Thus, the Union houses the offices of the Student Activities staff, student publications, the Chaplains, the University Conference Coordinator, and the Student Senate. Service departments of the Union include: the University Store, carrying a complete stock of books, supplies, and other items; the Union Food Service, providing snacks or catered meals; the Games Area, with bowling, billiards, table tennis and other facilities; the six-chair Barber Shop; and the Lobby Counter, the Union's general service facility (newspaper stand, box office, check-cashing service, record lending library, and information desk).

Three large lounges—the Cape Cod, Colonial, and Governor's—are available for reading and conversation. There is also a Music Room, for listening or piano practice; a Reading Room, containing home-town newspapers and periodicals; and ten Meeting Rooms for use by campus organizations.

Extra-curricular activities are selected, planned and executed by the Student Union Program Council and committees. These groups are composed of interested volunteer students, and their activities are coordinated by a full-time Program Coordinator.

The construction cost of the Student Union is being defrayed by a Student Union Fee of \$10 per student per semester. The excess of student fees over the bond schedule, plus revenue earnings, compose the operating fund for the Union building.

SPECIAL PROGRAMS

Distinguished Lectureships, Seminars, Colloquia

Each year the University brings distinguished personages to the campus to lecture on topics of major significance in the arts, sciences, public affairs, and other areas of human concern. Each talk is given either as a single public lecture or as part of a program of panel discussions and lectures sponsored by a University group for public presentation. Included in the yearly schedule of such events are the Alumni War Memorial Lectures; the University of Massachusetts Assembly lectures and seminars; public lectures of the University's Distinguished Professors of Public Affairs; panel discussions and talks delivered during International Weekend; and the Phi Kappa Phi and Sigma Xi lectures. In addition, individual departments sponsor continuing programs of extra-curricular lectures, seminars and colloquia for the benefit of majors in those departments as well as for other interested persons.

Recognizing that a comprehensive education is not sustained through curricular experience alone, the University urges all of its students to attend as many of the extra-curricular lectures as they possibly can. Students undertaking honors work or participating in the Dean's Scholars program are informed of forthcoming lectures through an Honors Council newsletter. The student body at large is kept informed of such events through notices in the college newspaper as well as through posters, class announcements, and other means. The entire program is directed towards giving students fresh perspectives and a broader experience than that afforded by the University curriculum alone.

Four College Cooperation

Amherst, Mount Holyoke, and Smith Colleges and the University of Massachusetts have for some time combined their academic activities in certain selected areas for purposes of extending and enriching their collective educational resources. Under this cooperative program, a student in any one of the four institutions may enroll in courses given at the other three if he has the necessary qualifications and the approval of the Dean or Provost of his own institution.

Catalogues of the courses offered at the other institutions are at the loan desk in each library and in the offices of all chairmen of departments. Application blanks and transportation information are available at the University in the Office of the Provost. Requests

SPECIAL PROGRAMS

are usually made for advanced courses in the student's major subject and are normally granted only to students in good standing.

The oldest and perhaps most important of the Four College cooperative ventures is the Hampshire Inter-Library Center, a separate legal entity with a Board of Directors composed of the four Presidents, the four Librarians, and representatives from each of the Faculties. HILC is a depository for research materials and learned periodicals of a kind and in a quantity well beyond the reach of any one of the four libraries operating independently. The Center is now located on the University campus in the new addition to Goodell Library.

An FM radio station, WFCR (88.5), is similarly a Four College activity, operating as a legal entity under a Board of Directors made up of representatives of the four institutions. Other cooperative activities, all designed to give added strength in one way or another to each institution, include: a joint astronomy department; new courses in the history of science; new courses in non-Western studies, financed for three years by the Ford Foundation; a Ph.D. program; a Film Center; a common calendar of lectures and concerts on all four campuses; and a committee on transportation. Additional cooperative projects are in the planning stage. The entire program is under the supervision of a Coordinator who is a member of the administration of all four institutions.

New England Regional Program

The University participates in a cooperative program conducted by the six New England state universities under auspices of the New England Board of Higher Education. Under this program, a student wishing to pursue studies in a major field not offered at his own state university may attend another New England state university at the in-state tuition rate. Information about the program is available in the Office of the Provost.

Humanities Center for Liberal Education

The offices of the executive director of the American Humanities Center for Liberal Education are maintained in South College. This is a national agency fostering strengthened relationships between the liberal arts and sciences and the world of affairs and action.

The American Humanities Seminar, under the auspices of the University and the Center, is held annually on campus. It seeks to strengthen cooperation among the liberal arts and sciences and the technological fields.

PROGRAM FOR SUPERIOR STUDENTS

The University provides superior students with challenging educational opportunities beyond those normally encountered in the regular four-year curricula. A flexible program of honors work, intended to develop and expand the potential of academically gifted students, is offered in the following areas.

Early Admission

The University will consider applications for admission to the freshman class from students of high standing who have completed their junior year of secondary school and who qualify by letters of recommendation, examinations, and personal interview.

Advanced Placement

The University grants advanced standing and college credit to entering students who have successfully completed certain college-level courses in their secondary schools as a part of the College Entrance Examination Board Advanced Placement Program or an equivalent. The University also administers a number of advanced placement tests to entering students enabling them to be placed in more advanced courses. Upon obtaining satisfactory standing in many of these courses, students will be granted academic credit for the courses bypassed.

Waiver of Requirements and Prerequisites

For students who, through tests, can prove proficiency in the skills and subject matter of the course to be waived.

Credit by Examination

Up to thirty semester hours of credit may be granted students of high standing who can fulfill the requirements of some of their courses through independent study.

Dean's Scholars: Freshmen and Sophomores

On the basis of their academic rank in secondary school, results in aptitude and achievement examinations, and their standing at the end of their first semester or year of college work, up to ten per cent of the students in the freshman class and fifteen per cent of the students in the sophomore class may be designated Dean's Scholars.

PROGRAM FOR SUPERIOR STUDENTS

These Scholars are accorded a number of privileges, including the right to participate in the Honors Colloquia.

Senior Departmental Honors

Departmental Honors are designed to recognize merit and give highly qualified students time and opportunity for independent study under closer, more personal direction than is ordinarily provided in the University curriculum. Such study shall be devoted to a careful exploration of some question, problem or theme of significance within the student's major field. The ultimate aim of Departmental Honors is to afford talented students maximum freedom to develop their powers of initiative and resourcefulness and greater freedom to make at least a beginning in original, contributive research. To be eligible for admission to Departmental Honors, a student should have a scholastic record of 3.0 or higher for the first five semesters of college work and demonstrate outstanding promise in his major field. In exceptional cases students who have averages lower than 3.0 but show unusual aptitude for independent work may be accepted if a written statement establishing this is presented to the Honors Council. Departmental Honors candidates are assigned an advisor who supervises the preparation of the thesis to be submitted to his department and to the Honors Council. The candidate also presents an oral defense of his thesis. If by the excellence of his work he satisfies all the requirements of his department and the Honors Council, the candidate is awarded honors in the field of his specialization upon graduation. During the senior year, independent study is carried forward each semester as a three-credit course in the department of the major. Senior Honors students have the privilege of enrolling in courses normally limited to graduate students. By permission of the head of the department of their major, Senior Honors students may gain admission to the Graduate School of the University and enroll in courses for graduate credit, provided requirements for the baccalaureate are separately fulfilled.

Further Opportunities for Independent Study

Students majoring in the College of Arts and Sciences who have a cumulative quality point average of 3.0 or better may, upon the recommendation of their major department, the Honors Council, and the approval of the Dean, pursue special courses of study during the senior year. The program must be the equivalent of thirty semester hours of credit, and students electing such programs will be granted release from other formal requirements of the senior year.

STUDENT ORGANIZATIONS

Participation in extra-curricular activities offers opportunities to further the broader objectives of a college experience. The knowledge, skills and judgment developed in the classroom can be tested and refined through use in the organizational setting. Thus, more than fifty professional clubs exist on campus as a means of stimulating vocational interest through close contact with members of the teaching staff and representatives of the professions. Student government offers a forum for debate on matters of importance to the entire University community. For those interested in communications, there are several campus publications as well as an FM radio station. Experience in music and drama is available in a number of forms.

Such activities can be a profitable means of fostering maturity and general enrichment in those students who wish to take optimum advantage of all that the University can offer. In encouraging participation in these activities, the University asks only that students plan their time well, in order that they may profit as much as possible from a total University program devoted, first and foremost, to academic studies.

All extra-curricular activities are supervised by the Committee on Recognized Student Organizations composed of alumni, faculty, and students. Recognition for outstanding achievement in this area is given at an annual Student Leaders Night held in the spring. An office devoted to administering and assisting in the conduct of student activities is located in the Student Union. Detailed information about student organizations may be obtained by contacting the Assistant Director—Student Activities.

Student Government

The Student Senate, operating under a student approved Constitution, has vested in it all legislative functions of student government and has the primary goal of promoting the welfare of the entire student body. The Senate levies student taxes and appropriates money for many student activities and services. At the same time, the Senate acts as the official representative of the students both on and off campus. In coordination with the Dean of Men and the Dean of Women, the Senate has the responsibility of establishing effective rules guiding the activities of students at the University.

STUDENT ORGANIZATIONS

Student Honor and Service Societies

Adelphia. The men's senior honor society, recognizing students who have been leaders in the extra-curricular activities of the campus.

Mortar Board. The Isogon Chapter of Mortar Board was installed at the University of Massachusetts in 1955. The purpose of the Society is to promote college loyalty, to advance the spirit of service and fellowship among University women, to maintain a high standard of scholarship, to recognize and encourage leadership, and to stimulate and develop a fine type of college woman. Membership is composed of a total of not less than five or more than 25 girls from the senior class selected on the basis of service, scholarship, and leadership.

Maroon Key. The men's sophomore honorary society, composed of 25 students recognized for leadership abilities and University services.

Scrolls. Women's sophomore honorary-service society, composed of 20 students elected at the end of the freshman year.

Alpha Phi Omega. A fraternity which renders various kinds of service to the University. The group is composed of former members of the Boy Scouts of America.

Revelers. A group of upperclassmen chosen to promote and encourage freshman interest and participation in campus activities.

Fraternities and Sororities

Social fraternities on the campus include Alpha Epsilon Pi, Alpha Gamma Rho, Alpha Sigma Phi, Kappa Sigma, Lambda Chi Alpha, Phi Mu Delta, Phi Sigma Delta, Phi Sigma Kappa, Q.T.V., Sigma Alpha Epsilon, Sigma Phi Epsilon, Tau Epsilon Phi, Tau Kappa Epsilon, Theta Chi. An Inter-Fraternity Council, consisting of representatives of these fraternities, has charge of rushing and all general matters dealing with fraternity life. A cooperative organization—The Fraternity Managers' Association—pools the financial resources of all fourteen fraternities for purposes of effecting orderly, economical purchasing and accounting procedures. A professional Fraternity Manager, with offices in South College, administers the Association's program.

Sororities include Chi Omega, Gamma Chi Alpha, Kappa Alpha Theta, Kappa Kappa Gamma, Phi Delta Nu, Pi Beta Phi, Sigma Delta Tau, and Sigma Kappa. The Panhellenic Council, made up of representatives from the sororities, supervises rushing and other sorority matters.

STUDENT ORGANIZATIONS

Campus Publications

The Collegian. Tri-weekly newspaper published by undergraduates.

The Literary Magazine. Magazine for the publication of literary and artistic efforts of undergraduates.

Ya Hoo. Campus humor magazine, published three times a year.

Engineering Journal. Quarterly open to science and engineering students for the publication of technical articles and essays of general interest.

Dramatics

The Roister Doisters. The University's drama club, the Roister Doisters, is open to all four-year students interested in any phase of the art of the theater. Regular performances of major plays gives members excellent opportunities for gaining experience in acting, production techniques, and other aspects of dramatic presentation.

University Music Organizations

Campus music organizations provide experience in musical and allied activities for performers and technicians with various kinds of interest and ability. Membership is open to all students, faculty, alumni, and others in the area community.

Bands. The Concert, Marching, and Dance Bands are formally organized groups in which student instrumentalists may participate. Informal ensembles for special occasions are also available.

Chorale. The University's choral group rehearses notable works for presentation on campus and on tour. Smaller choral ensembles are trained for special musical events.

Operetta Guild. The Guild produces standard works from the repertoire of American musical theater. Membership is open to persons interested in an art form which provides experience in many elements of musical performance as well as in staging, acting, and other theater activities. The Guild sponsors an Opera Workshop each year as well as miniature musical theater groups.

Concert Association. The Association offers students an opportunity to stage professional concerts and recitals and to administer a large-scale annual enterprise involving major financial and promotional concern. The Association each year presents distinguished attractions including national symphony orchestras, outstanding operatic performers, instrumental virtuosi, and other offerings.

STUDENT ORGANIZATIONS

Professional Clubs

Numerous professional clubs, established in connection with the various major courses of study, stimulate students' professional interest in their chosen fields and afford opportunity for discussion of technical subjects of mutual interest.

Intercollegiate and Intramural Athletics

The University believes there are educational advantages in a well-organized intercollegiate and intramural sports program. In intercollegiate athletics, the University is represented by teams in all the leading sports, including football, soccer, cross-country, basketball, swimming, wrestling, indoor and outdoor track, hockey, rifle and pistol, baseball, tennis, golf, lacrosse, gymnastics, skiing.

The University also supports a broad program of intramural activities, in which all students are encouraged to participate. The range of sports available each year includes the team sports of touch football, basketball, softball, volleyball. Individual activities include tennis, bowling, badminton and golf.

The University Intercollegiate Athletic Program is supervised by the University Athletic Council and is composed of the following members: five faculty members appointed by the President, three alumni representatives appointed by the Directors of the Alumni Association, the Executive Director of the Alumni Association, and ex officio, the Director of Athletics.

The University of Massachusetts is a member of the Yankee Conference, the National Collegiate Athletic Association, the Eastern College Athletic Conference, the Association of New England Colleges for Conference on Athletics, and the Intercollegiate Athletic Association.

HONORS, PRIZES, AWARDS

Academic Honor Societies

Phi Kappa Phi. The Honor Society of Phi Kappa Phi is a national organization, and has been represented on this campus since 1904. Its primary objective is the recognition and encouragement of superior scholarship in all fields of study. Good character is an essential supporting attribute. The Massachusetts chapter elects undergraduates in either their junior or senior years. Members of the Faculty and graduate students are also eligible for election.

Sigma Xi. The Society of the Sigma Xi is the national honor society whose objective is the encouragement of original investigation in science, pure and applied. Since 1938, a chapter of the Society has been active on the campus of the University. The Chapter may elect to associate membership undergraduate students who have shown marked excellence in the study of recognized fields of the sciences and engineering. Election to full membership is accorded those who have clearly demonstrated ability to pursue independent scientific research. The Chapter sponsors a program of public lectures and a number of awards designed to foster the objectives of the Society.

Sigma Gamma Epsilon. The Beta Theta chapter of the Sigma Gamma Epsilon Fraternity was installed at the University of Massachusetts in 1951. The purpose of the fraternity is to stimulate scholastic, scientific, and social advancement of students of the earth sciences in universities and scientific schools with recognized standings in the United States and Canada. Membership is open to men majoring in geology, mining, metallurgy, ceramics, petroleum engineering, or other branches of earth sciences, who meet the requirements of the fraternity.

Omicron Nu. The Alpha Pi chapter of the Society of Omicron Nu was installed on the campus in 1952. The purpose of the society is to recognize superior scholarship and to promote leadership and research in home economics. Membership is open to juniors and seniors majoring in home economics who meet the requirements of the society.

Phi Tau Sigma. Phi Tau Sigma Honorary Society is the international honor society for food science. It was founded at the University of Massachusetts in 1953, and its executive headquarters are permanently located here. Its purpose is to encourage and recognize achievement in food science. Senior students from all

HONORS, PRIZES, AWARDS

departments related to food science are eligible for election to membership if they meet scholastic and character requirements of the University Chapter.

Tau Beta Pi. The Massachusetts Zeta Chapter of Tau Beta Pi was installed on campus in the fall of 1955. The society exists for the purpose of honoring engineering students of high scholarship, character, and interest in campus activities. Senior and junior students in the School of Engineering are eligible for election to membership if they meet the requirements.

Beta Gamma Sigma. The Gamma Chapter of the University of Massachusetts was installed in 1959. The purposes of the Society are to encourage and reward scholarship and accomplishment among students in commerce and business administration; to promote the advancement of education in the art and science of business; and to foster integrity in the conduct of business operations.

Alpha Lambda Delta. The Scholastic Honor Society for Freshman Women was installed at the University of Massachusetts as a chapter of Alpha Lambda Delta, national honor society, in 1960. The purpose is to promote intelligent living and to encourage superior scholastic attainment among freshman women. Members are students who achieve averages of 3.5 or above in the first semester or in cumulative average at the end of the first year of college.

Phi Eta Sigma. The Society of Phi Eta Sigma was installed on the campus in 1955. The purpose of the society is to recognize outstanding scholastic achievement by freshmen men and to encourage a higher standard of learning among all freshmen. Honorary membership is granted those faculty members who are most effective in encouraging students in the attainment of these goals.

(Student honor and service societies—those recognizing leadership in extra-curricular activities as well as scholastic attainment—are listed under Student Organizations, beginning on Page 54. These include, among others, the senior men's and women's honor societies, Adelpia and Mortar Board.)

Scholastic Prizes

PHI KAPPA PHI AWARDS FOR SCHOLARSHIP. The University of Massachusetts chapter of Phi Kappa Phi, national all-university scholastic honor society, annually presents substantial monetary awards to the outstanding scholar or scholars of each of the three upper classes. These awards, based upon cumulative scholastic averages and character, are presented at the Honors Banquet in the spring.

HONORS, PRIZES, AWARDS

THE BURNHAM PRIZES. These were made possible through the generosity of Mr. T. O. H. P. Burnham of Boston. Prizes of \$25 and \$15 are awarded through the Department of Speech to those students delivering the best and second best oral interpretation of literature in the Burnham Contest. Preliminary contests are open under certain conditions to freshmen and sophomores.

THE FLINT PRIZES. The Flint Speaking Contest was established in 1881 by a gift of the late Charles L. Flint, a former president of the College. After his death the prizes were continued by college appropriation. Awards of \$25 and \$15 are presented through the Department of Speech as first and second prizes respectively to those two upperclassmen delivering the best extemporaneous speeches in the contest.

MASSACHUSETTS ASSOCIATION OF REAL ESTATE BOARDS. \$100 for that student doing the best work in the course in Real Estate in the School of Business Administration.

MASSACHUSETTS SOCIETY FOR PROMOTING AGRICULTURE PRIZES. Three prizes of \$25, \$15, and \$10 are awarded to those senior students who are judged to have made the best record in a speaking contest held early in May.

NATIONAL FOOD BROKERS ASSOCIATION SCHOLARSHIP. \$250 to be awarded to either an undergraduate or graduate student from the Department of Marketing (School of Business Administration) who is interested in making a career in the food industry.

SIGMA XI SCHOLARSHIP AWARD. The Massachusetts Chapter of the Society of the Sigma Xi makes an award of \$100 annually to an undergraduate student at the University in recognition of a developing research interest in the sciences or engineering.

BETTY STEINBUGLER PRIZE IN ENGLISH. This prize was endowed by John L. Steinbugler, New York City, in honor of his daughter, Elizabeth Steinbugler Robertson, a graduate of this University in 1929. It is awarded to a woman in the junior or senior class who has written the best long paper on a subject of literary investigation in a course in English during the year.

L. R. WILSON AWARD IN GEOLOGY. This award, named in honor of the former head of the Geology Department, is conferred on the graduating senior with an outstanding academic record as a major in geology.

HONORS, PRIZES, AWARDS

Athletic Awards

CHESTER F. BOWEN JR. MEMORIAL AWARD. The class of 1949 presented the Chester F. Bowen Jr. Memorial Award in track and cross-country to the University as its class gift. Members of the class felt that this gift would be the most appropriate which they could give the University, since it would be a fitting memorial to a former classmate and a worthy award for the outstanding athlete in varsity track and cross-country.

SAMUEL S. CROSSMAN MEMORIAL TROPHY. This award is made to the member of the senior class who must have received two varsity awards, had an above average academic record, and possessed qualities of enthusiasm, cooperation, leadership, and be recognized as the outstanding student-athlete on the campus. The trophy was established by the University Athletic Council. The award is dedicated to the memory of Samuel S. Crossman and consists of a trophy upon which the name of the student chosen is to be inscribed. A small replica will be presented for his permanent possession.

L. L. DERBY AWARD. This plaque is presented by the Alumni Varsity M Club each year at its Commencement meeting to that member of the track team who is considered to have been the most valuable member of the team during the past season.

EASTERN COLLEGE ATHLETIC CONFERENCE AWARD. This award is designed to signalize and honor the student whose combined record of academic and athletic activity at each Conference member college. The E.C.A.C. is composed of 114 colleges and universities located in the eastern section of the United States.

THE WILLIAM T. EVANS MEMORIAL TROPHY. This trophy is given each year to that member of the varsity football team who through his sportsmanship, football ability, character and personality, has exemplified the character and spirit of the person in whose memory this memorial trophy is dedicated. The trophy is dedicated to the memory of William T. Evans, a former member of the class of 1942, who died December 9, 1941. This trophy is presented annually by the class of 1942.

GOLF AWARD. Presented to the most valuable member of the Golf Team as chosen by the lettermen of the squad.

GYMNASTICS CUP. Awarded to the most valuable member of the Gymnastic Team.

HONORS, PRIZES, AWARDS

HOCKEY AWARD. This plaque shall be awarded annually at the Commencement meeting of the Varsity Club, to that member of the hockey team who is considered to have been the most valuable player to the team.

THE JOSEPH LOJKO MEMORIAL PLAQUE. This plaque is presented to a senior who must be a letter man, have a satisfactory scholastic record and show those qualities of enthusiasm and cooperation which make for leadership. It is awarded in honor of Joseph Lojko of the Class of 1934, outstanding athlete who died while a senior in the College.

MANAGER OF THE YEAR AWARD. The Athletic Association awards a gold plaque to that varsity sports manager who had demonstrated initiative and proficiency in managerial duties.

PISTOL MEDAL. Awarded on a point basis to a member of the varsity team.

THE ALLAN LEON POND MEMORIAL MEDAL. This medal is awarded for general excellence in football in memory of Allan Leon Pond of the class of 1920, who died February 26, 1920. He is described as "A congenial companion, a devoted lover of Alma Mater, a veteran of World War I, a fine all-round athlete and a true amateur. He would rather win than lose, but he would rather play fair than win." He has been characterized as a typical student of the University.

RIFLE AWARD. Awarded on a point basis to the outstanding member of the varsity rifle team.

PAUL SEARS PUTNAM MEMORIAL TENNIS TROPHY. This trophy is awarded to that member of the varsity tennis team who has displayed by his conscientious endeavor, clean play, good sportsmanship and all-around ability as an athlete and scholar, that he is a credit to his team and University, and shall have his name inscribed on the trophy. He shall also be presented with a suitable medal or watch charm. The trophy is established in memory of Paul Sears Putnam, '38, by the members of his family, in the hope that it will stimulate and encourage students to emulate his characteristics of whole-hearted enthusiasm and good sportsmanship, true cooperation and the constant endeavor to always give to the best of their ability in any project they may undertake.

GEORGE HENRY RICHARDS MEMORIAL CUP. This cup is awarded annually to the member of the basketball team who shows the greatest improvement in leadership, sportsmanship, and individual and team play during the year. It is in memory of George

HONORS, PRIZES, AWARDS

Henry Richards of the Class of 1921 who died suddenly while a student at the College.

SAMUEL B. SAMUELS BASKETBALL CUP. This cup is presented annually in the name of Samuel B. Samuels of the Class of 1925 who was an outstanding basketball player during the early years of basketball as a varsity sport at the University. The trophy is awarded to that letterman who is a regular member of the varsity team and who has performed with excellence during scheduled varsity games.

MAURICE SUHER SOCCER PLAQUE. This trophy is to be awarded annually to that letterman of the varsity team who is deemed to have been the most valuable member of the team. It is presented to the University by Maurice Suher of the class of 1930, who was one of the two students largely instrumental in having soccer recognized as a varsity sport at the University. He played on the first varsity soccer team at the University of Massachusetts, in the fall of 1929.

SPORTS DAD AWARD. The Sports Dad Association was formed in 1958 and consists of fathers of all varsity athletes. This association awards three trophies to outstanding athletes for scholastic achievement and athletic excellence.

SWIMMING TROPHY. Awarded to the most valuable member of the varsity swimming team.

E. JOSEPH THOMPSON MEMORIAL TROPHY. This baseball trophy is given by Thomas Thompson in memory of his brother, E. Joseph Thompson who graduated from Massachusetts State College in 1932. He was president of the Student Senate, a varsity letter man in football and baseball, and an outstanding campus citizen. The award goes to that member of the varsity baseball team who best exemplifies the most admirable characteristics of the sport each year.

WRESTLING TROPHY. Awarded to the most valuable member of the varsity wrestling team.

MILITARY AND AIR SCIENCE HONORS AND AWARDS

Leadership, scholarship, and proficiency in the work of the Military and Air Science departments are recognized by honors and awards announced at the Annual Federal Inspection in May.

HONORS, PRIZES, AWARDS

Department of Military Science

DISTINGUISHED MILITARY STUDENTS. Each year the Professor of Military Science designates as distinguished military students those members of the first year advanced course who possess outstanding qualities of leadership, high moral character, and a definite aptitude for the military service. Students who are so designated must possess an academic standing in the upper half of their class or in the upper ten per cent of their class in military subjects. All distinguished military students are authorized to wear the distinguished military student badge.

DISTINGUISHED MILITARY GRADUATES. Each year the Professor of Military Science designates as distinguished military graduates those members of the graduating class who were previously designated as distinguished military students and have maintained the same high standards required for such designation and have successfully completed training at the Reserve Officers' Training Camp.

U.S. ARMOR ASSOCIATION SCROLL. Awarded by the U. S. Armor Association to the outstanding Armor cadet graduating from the senior ROTC class. An engraved scroll bearing the name of the winner is presented to the winning cadet to keep in his personal possession.

ARMED FORCES COMMUNICATIONS ASSOCIATION HONOR AWARD. Awarded by the Armed Forces Communications Association to the outstanding senior ROTC cadet majoring in electrical engineering. The winner is presented with an appropriately engraved gold medal and scroll.

MILITARY SCIENCE FACULTY AWARD. Awarded by the Military Science faculty to the Cadet Colonel of the Armored Combat Command for outstanding leadership. The winner is presented a complete set of officers' insignia.

RESERVE OFFICERS ASSOCIATION MEDAL. Awarded by the Reserve Officers Association of the United States, Massachusetts Department, to the Junior Armor cadet who is outstanding in military proficiency. The winner's name is engraved on a plaque and a medal, appropriately engraved, is given to the individual to keep in his personal possession.

ELIZABETH L. MCNAMARA TROPHY. Awarded by Mrs. Elizabeth L. McNamara, a former trustee of the University of Massachusetts for many years, to the Armor cadet ranking first in scholarship in the second year basic course. The winner's name is engraved on

HONORS, PRIZES, AWARDS

a plaque and a sterling silver goblet, appropriately engraved, is given to the individual to keep in his permanent possession.

MILITARY SCIENCE TROPHY. Awarded by the Department of Military Science, University of Massachusetts, to the Armor cadet ranking first in the second year basic course. The winner's name is engraved on a sterling silver goblet which is given to the individual to keep in his permanent possession.

AMHERST ROTARY CLUB TROPHY. Awarded by the Amherst Rotary Club to the Armor cadet ranking first in scholarship in the first year basic course. The winner's name is engraved on a plaque and a sterling silver goblet, appropriately engraved, is presented to the winner to keep in his personal possession.

THE MILITARY SCIENCE AWARD. Awarded annually by the Department of Military Science, University of Massachusetts, to the Armor cadet ranking first in military proficiency in the first year basic course. The winner's name is engraved on a gold medal which is presented to him.

DEPARTMENT OF THE ARMY AWARDS. The Department of the Army awards annually the Superior Cadet Ribbon with certificate and lapel device, to one outstanding student in each academic class. The winner of the award must be in the upper one fourth of his academic class and be selected by the PMS and Dean of Men.

THE JOHN C. HALL TROPHY. Awarded annually to the second year basic course student who ranks number one in military proficiency. The winner's name is engraved on a loving cup which is of permanent nature and maintained in the military offices. A cordial type sterling silver goblet appropriately engraved is presented to the winner.

ASSOCIATION OF THE UNITED STATES ARMY MEDAL AND CERTIFICATE. Awarded annually by the publishers of Army magazine to the Junior Cadet who has demonstrated outstanding qualities of leadership and efficiency.

CHICAGO TRIBUNE AWARDS. Awarded annually to two Military Science I and Military Science II Cadets. The recipients must be members of the Bay State Rifles, who have demonstrated outstanding qualities of leadership and military proficiency.

SOCIETY OF AMERICAN MILITARY ENGINEERS AWARD. A gold medal is presented annually by the Society of American Military Engineers to the outstanding engineering student enrolled in advanced Military Science.

HONORS, PRIZES, AWARDS

Department of Air Science

DISTINGUISHED AFROTC CADET. Each year the Professor of Air Science will select from the students who are completing the second year advanced course, AFROTC, those who possess outstanding qualities of character, leadership, and a definite aptitude for the military service for designation as Distinguished AFROTC Cadets.

DISTINGUISHED AFROTC GRADUATE. Each year the Professor of Air Science will designate the Distinguished AFROTC Graduates from those Distinguished AFROTC Cadets who have completed the advanced course, AFROTC, and who will receive their baccalaureate degree. The Distinguished AFROTC Graduates, with their consent, may compete for a regular Air Force Commission.

AIR SCIENCE TROPHY. Awarded by the Department of Air Science to the Air Science freshman cadet most outstanding in Military and Academic Scholarship. The trophy is a silver cup appropriately engraved.

CHICAGO TRIBUNE AWARDS. Awarded to two Air Science freshmen and sophomore cadets who have maintained the highest AFROTC grades and general academic excellence. The awards are engraved medals.

AS II CONSOLIDATED VULTEE AIRCRAFT CORPORATION AWARD. Awarded to the most outstanding Air Science Sophomore cadet who has applied for the Advanced Course, is interested in and qualified for Flight Training. The award is an aircraft model.

SONS OF AMERICAN REVOLUTION MEDAL. Awarded by the Sons of the American Revolution to an Air Science sophomore cadet selected for leadership, soldierly bearing and general excellence. The winner's name is engraved on a medal which is presented to the individual.

AMHERST POST AMERICAN LEGION TROPHY. Awarded by the Amherst Post American Legion to the Air Science sophomore cadet who has demonstrated the most outstanding abilities in Military Drill and Scholarship. The trophy is an engraved silver cup.

AIR CADET SQUADRON TROPHY. Awarded by the Air Cadet Squadron to an Air Science sophomore cadet who has been an outstanding member of the Air Cadet Squadron and Drill Team. A silver cup appropriately engraved with the individual's name is presented to the winner.

THE SOCIETY OF AMERICAN MILITARY ENGINEERS ENGINEERING AWARD. Awarded by the Society of American Military Engineers

HONORS, PRIZES, AWARDS

to the Air Science junior cadet who is the outstanding engineering student of the year in his group in the AFROTC unit, as recommended by the Dean of the School of Engineering and the Professor of Air Science.

AMHERST ROTARY CLUB AWARD. Awarded by the Amherst Rotary Club to the Air Science junior cadet who is the most outstanding in physical sciences or engineering, and who has demonstrated excellent qualities of leadership and high moral character.

AIR SCIENCE TROPHY. Awarded by the Department to the Air Science junior cadet who has displayed outstanding military proficiency and maintained a high scholastic standing. A silver cup engraved with the individual's name is presented to the winner.

AIR FORCE ASSOCIATION MEDAL. Awarded by the Air Force Association to the most outstanding Air Science junior cadet. The award is an engraved medal.

RESERVE OFFICERS ASSOCIATION MEDAL. Awarded by the Massachusetts Reserve Officers Association to the graduating Air Force cadet who has been outstanding in scholarship and military proficiency. The award is an engraved medal.

AIR SCIENCE TROPHY. Awarded by the Department of Air Science to the graduating Air Science senior cadet who has demonstrated superior qualities of leadership, military bearing and scholarship. The trophy is an engraved silver cup.

ARMED FORCES COMMUNICATIONS AND ELECTRONICS ASSOCIATION MEDAL. Awarded by the Armed Forces Communications and Electronics Association to the graduating Air Science senior cadet majoring in electrical engineering, who has demonstrated outstanding qualities of military leadership, high moral character and a definite aptitude for military service. The award is an engraved medal.

UNDERGRADUATE CURRICULA

Undergraduate instruction is provided in the College of Arts and Sciences, the College of Agriculture, the Schools of Business Administration, Education, Engineering, Home Economics, Nursing, and Physical Education.

This section of the catalogue deals with the opportunities for study and the curricula available in each of these departments of the University.

COLLEGE OF ARTS AND SCIENCES

I. MOYER HUNSBERGER, *Dean*

The College of Arts and Sciences offers instruction in the fine arts, the humanities, the social sciences, the natural sciences, and mathematics both for students enrolled in the College and for those in other undergraduate divisions of the University. The program provides for the breadth of intellectual development essential to a liberal education and for concentration which is the necessary foundation for competence in a selected discipline.

The Bachelor of Arts degree may be earned by students majoring in any division of the College. The Bachelor of Science degree may be earned by students in the natural sciences or mathematics.

The graduation requirements of the College of Arts and Sciences are:

- I. The successful completion of at least 120 credits (required physical activity and required ROTC not included in the computation). Candidates for the Bachelor of Science degree complete a minimum of fifty credits within the natural sciences or mathematics.
- II. BASIC REQUIREMENTS—are normally completed in the first two years and consist of:
 1. English 1, 2, 25, 26, and Speech 3.
 2. Intermediate proficiency in a foreign language, as determined by the successful completion of the second year course at the college level or by examination. The latter may be taken during the summer orientation period prior to the freshman year, or during subsequent language study subject to the approval of the department concerned.
 3. One semester course in each of two social sciences.
 4. Two years in the natural sciences and mathematics as follows:

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- a. For students majoring in mathematics or natural science: one year of biological science and one year of physical.
 - b. For students majoring in the social sciences and humanities: two years of natural science or one year of science and one year of mathematics; one semester of logic may be substituted for one semester of mathematics. See III below for distribution requirements.
5. Candidates for the degree of Bachelor of Arts must complete History 5 and 6.

III. DISTRIBUTION REQUIREMENT—two semester courses selected from the approved list in each of the two divisions of the curriculum in which the student is not majoring.* In the selection of distribution courses in the natural sciences and mathematics, the distribution requirement together with the basic requirement will be satisfied by either of the following patterns:

- a. One year of physical science;
One year of biological science (Entomology 26 may be counted as one semester);
One year of mathematics (logic may be substituted for one semester).

or

- b. One year of physical science;
One year of biological science;
One year of either biological or physical science, (or one semester of each), the choice of courses being governed by the list of approved courses.

For distribution purposes the following groupings have been approved:

- | | | |
|------------------------------------|------------------------|---|
| a. The Humanities
and Fine Arts | b. The Social Sciences | c. The Natural
Sciences and
Mathematics |
| English | Economics | 1. Physical |
| Foreign Languages | Government | Astronomy |
| History | Psychology | Chemistry |
| Art | Sociology | Geology |
| Music | | Physics |
| Philosophy | | 2. Biological |
| Speech | | Bacteriology |
| | | Botany |
| | | Zoology |
| | | 3. Mathematics |

*Copies of the approved list are available from the student's adviser.

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IV. MAJOR REQUIREMENTS:

Each student must complete at least twenty-four (24) semester hours of credit in some one department, of which at least fifteen (15) must be in courses numbered 50 or above. No student may present for graduation more than thirty (30) junior-senior hours in any one department, exclusive of honors work. A student for whom any basic requirements are waived by examination may use the time thus saved to augment his work in the major by a maximum of six semester hours.

V. SPECIAL PROGRAMS:

Any student who at the end of the first semester of his junior year presents a quality point average of 3.0 or higher, and is recommended by his major department for release from formal requirements, may, with the approval of his adviser and the Dean, work out a special program of study for his senior year. This program can consist of any approved combination of course work and independent research or creative effort.

FRESHMAN YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 1	2	English 2	2
Speech 3*	2	Speech 3*	2
Mathematics or Natural Science ¹	3	Mathematics or Natural Science ¹	3
Natural Science or History 5 ²	3	Natural Science or History 6 ²	3
Foreign Language ³	3	Foreign Language ³	3
Elective ⁴		Elective ⁴	3
Military or Air Science 1 (men)	1	Military or Air Science 2 (men)	1
Physical Education 1, 2 (men)	2	Physical Education 3, 4 (men)	2
Physical Education 5, 7 (women)	2	Physical Education 6, 8 (women)	2

¹ Candidates for the B.S. degree take Mathematics. Those planning to major in chemistry or physics should, if possible, elect Mathematics 5 and 6.

² Candidates for the B.S. degree take natural science; candidates for the B.A. degree take History 5 and 6.

³ Subject to exemption on basis of proficiency examination.

⁴ Candidates for the B.S. degree take science.

* May be taken either semester.

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SOPHOMORE YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 25	3	English 26	3
Foreign Language ¹	3	Foreign Language ¹	3
Social Science ²	3	Social Science ²	3
Natural Science or Mathematics ³	3-4	Natural Science or Mathematics ³	3-4
Elective ²	3-4	Elective ²	3-4
Military or Air Science 25 (men)	1	Military or Air Science 26 (men)	1
Physical Education 25, 27 (women)	2	Physical Education 26, 28 (women)	2
Physical Education 31, 32 (men)	2	Physical Education 33, 34 (men)	2

¹ Subject to exemption on basis of proficiency examination.

² In selecting the social science courses and electives, students should be guided by the recommendations for sophomore work given under the descriptions of junior-senior curricula that follow.

³ The courses in natural science or mathematics should be selected to fulfill the basic requirements (see under "II" above) in this division.

JUNIOR-SENIOR CURRICULA

Major work is available in the following departments.

Art

P. F. NORTON, *Adviser*

The department of art is interested in providing two kinds of training: first, to give each student a good general historical and aesthetic knowledge of the arts; second, to give each student an opportunity to develop his creative ability in the several media of the arts. Majors will have specialized sufficiently to allow them to enroll in a professional art school at an advanced level, or to take jobs upon graduation in business or cultural organizations where some facility in the arts is required.

By arrangement with the School of Education, courses can be so arranged that an art major will secure the necessary credits in education to allow him to teach art in the public schools.

All majors should take Art 14, and either Basic Drawing or Basic Design during their first two years; and in the junior and senior years a sequence of advanced courses as advised by the department.

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Astronomy

ROBERT HOWARD, *Adviser*

A Department of Astronomy conducted jointly with Amherst, Mount Holyoke, and Smith College provides instruction in this field. All advanced courses are given on a joint basis for students from the four participating institutions.

The Department of Astronomy offers courses which furnish (1) specialization for those planning a career in astronomy and (2) a background for students in other departments who are interested in astronomy for its cultural or scientific value.

Students majoring in astronomy should plan to finish Astronomy 2, Physics 4 or 7, and Mathematics 30 by the end of their sophomore year.

During the junior and senior years the following courses should be taken: Astronomy 51, 52, 65, 66, 75 and 76; Physics 55, 56; Mathematics 91, 92. Students who plan to go on to graduate school should substitute Physics 61 for Astronomy 52; Mathematics 63 and 83 for Astronomy 75 and 76. These students should also obtain a good reading knowledge of German and French (or Russian).

Bacteriology

R. L. FRANCE, *Adviser*

The courses in bacteriology have been planned to furnish (1) a basic and applied training for students majoring in other departments who must have some knowledge of bacteria and (2) specialization for those contemplating a professional career in bacteriology.

Students majoring in bacteriology should complete the following courses in their sophomore year: Chemistry 29 and 32, Zoology 35, and Bacteriology 31. Physics 3 and 4 are advised and may be elected junior year by bacteriology majors.

During the junior and senior years the following courses should be taken: Chemistry 51, 52, and 79; Zoology 69; Public Health 88; Bacteriology 51, 52, 56, and 85.

Botany

D. S. VAN FLEET, *Adviser*

Programs in botany prepare students for teaching and research in biological sciences in high schools, universities, industry, and experiment stations.

Students majoring in botany who do not plan to teach in secondary schools should complete the following courses prior to their junior year: Botany 1, 25, 26, Chemistry 1, 2, and Zoology 1.

Students interested in plant morphology, anatomy or systematics will take the following prescribed courses: Botany 57, 67, 81, and

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Zoology 53; and a minimum of 3 courses will be required from the following: Botany 59, 60, 61, 62, 66 and 89. Majors planning a pre-professional course in plant physiology and plant ecology will be required to take Botany 57, 67, 81, Chemistry 33 and Zoology 53 with additional courses as determined by the major adviser.

Botany majors planning to teach in secondary schools must complete Botany 1, 25, 26, Zoology 1, and 35, and Chemistry 1 and 2 prior to the junior year. Psychology 56 and Education 51 should be completed in the junior year and Education 52, 85, and 88 must be completed in one semester of the senior year; required courses in botany will include a selection of at least 5 courses from the following: Botany 57, 61, 62, 66, 67, 81 and 89; some additional courses in related disciplines will be prescribed by the department adviser.

Chemistry

GEORGE R. RICHASON, *Acting Adviser*

The prime purpose of the Department of Chemistry is to offer sound preparation for graduate study in chemistry. Accordingly, emphasis is placed upon intellectual accomplishment and broad understanding rather than on terminal training for specific chemical tasks. The program designed for this purpose also affords sound preparation for direct entry into chemical industry, chemical institutes, or governmental laboratories. A slightly modified program permits preparation for secondary school teaching.

Students planning to major in chemistry should take Chemistry 3, 4; German 1, 2; Mathematics 5, 6; Botany 1 and Zoology 1 in the freshman year. The sophomore program should include Chemistry 29, 32; Mathematics 31, 32; Physics 3, 4; German 25, and a science section of German 26. Students who must take the Mathematics 1, 4, 29, 30 sequence should, if possible, add Mathematics 91, 92.

The junior chemistry major takes Chemistry 51, 52 (Organic Chemistry) and 65, 66, 67, 68 (Physical Chemistry). In the senior year the student must elect four of the following courses (Chemistry 77, 81, 82, 83, 84, 86, 87, 88, 92, 93, 94, Honors), of which two must be selected from Chemistry 77, 81, or 82, 83, and 86. Students doing Honors and taking Chemistry 93 and 94 may elect one instead of two from this list.

An advanced chemistry program is available to students selected by examination prior to freshman registration. These students take Chemistry 25, 26 in the freshman year instead of Chemistry 3, 4, 29, 32, thus permitting them to take Chemistry 51, 52 in the sophomore, rather than the junior year.

In addition to the required two years of German, majors are urged to elect Russian 1, 2 when possible.

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Economics

P. L. GAMBLE, *Adviser*

In economics the aims are twofold: (1) to give the student an understanding of economic theory and of the application of economic principles to the organization of society; (2) to provide students with the elementary training necessary for further study and solution of economic and business problems.

The department requires that all majors irrespective of the career desired take the following courses: Economics 53, 73, Accounting 25, and Statistics 79 or Mathematics 63. In addition, each student must select an additional 12 credit hours of work from the Economics curriculum. No major student is permitted to take more than 36 junior-senior credit hours of economics, agricultural economics and business administration courses. In choosing elective courses students are urged to select courses in the humanities and preferably some from the allied fields of history, philosophy, government, psychology, and sociology. Those intending to major in economics should elect Economics 26 in the sophomore year.

For the majors in economics, there are offered courses which may be combined to serve as preparation toward a number of different careers in business, government, and teaching. Possible fields include: Banking and finance, international trade, labor and personnel relations, market research, public utilities, including transportation, social security, statistics.

English

G. STANLEY KOEHLER, *Adviser*

The major in English affords the student opportunities to improve his knowledge of the English language and his ability to use it clearly, logically, and artistically; to increase his knowledge of Western literature written in English or translated with distinction into English; to read and discuss a literary work with perception and understanding, and to form an independent estimate of it by valid critical standards. Apart from its value as liberal education, such a program is especially helpful to students whose interests lie in writing, editing, criticism, and teaching.

The Department of English offers courses in composition, literature, and language. Students majoring in English must (1) elect a semester of English history; (2) write a documented paper each semester during which a departmental elective in literature is being taken (except during summer session or the Education Block); (3) elect 30 hours (exclusive of honors work) in departmental electives, of which 15 must conform to the distribution requirements of the department; and (4) maintain a quality-point average of 2.0 or

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better in all departmental electives from the beginning of the junior year on.

Geology

H. T. U. SMITH, *Adviser*

For students considering geology as a career, the opportunities are many. Those interested primarily in basic science may look to positions in teaching, in museum work, on state and federal surveys, and in various research organizations. Those concerned mainly with applied science may direct their efforts toward work in mining geology, petroleum geology, engineering geology, and ground-water geology, and industrial mineralogy.

For a major in geology leading to the Bachelor of Science degree, requirements are: one year each of chemistry, physics, and biologic science; mathematics through calculus; 33 credits in geology including courses 1 (or 50), 2, 33, 42, 56, 63, 74, 78, and an approved summer field course; and at least 15 additional hours in mathematics, engineering, geology, or other sciences, elected on consultation with the departmental adviser. German is recommended for the foreign language.

For a major leading to the Bachelor of Arts degree, requirements are: one year of each of chemistry and physics; one semester of zoology; mathematics through trigonometry and analytic geometry; and 30 credits in geology, including courses 1, 2, 33, 42, 56, 72, and 74. Strongly recommended also is additional work in related sciences and mathematics, together with a summer field course (which may be substituted for course 72).

All students majoring in the department are required to maintain a quality point average of at least 2.0 for advanced courses in geology. Students planning to teach science in secondary schools, or interested in combining geologic and engineering training, may consult the department head for special provisions relating to their programs.

German

F. C. ELLERT, *Adviser*

The courses in German are intended to give a practical knowledge of the language for the purpose of wider reading, research, and oral communication.

During the junior and senior years each student will complete not less than 24 and not more than 30 credits in the junior-senior German courses. German 59, 79, and 80 are required of all major students. Students planning to use the language professionally are also urged to supplement their courses here with a summer session at an approved school of German.

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Government

JOHN HARRIS, *Adviser*

The courses offered by the department of government are designed to aid the student in gaining a knowledge of the nature, functions, and problems of government, and of the place of government in the modern world. Political theory, constitutional law, international relations, comparative government, politics and public administration are the principal areas covered.

Students taking work in government may prepare themselves for (1) graduate study in political science and government, (2) careers in public administration at federal, state, and local levels, (3) research concerning governmental problems, (4) the study of law, (5) entrance into foreign service, (6) teaching government and social science courses in secondary schools.

Majors in the field should elect Government 25 and 26 in their sophomore year. In the junior and senior years a minimum of eight additional courses in government is recommended. In addition, supporting courses in the fields of history, economics, sociology, psychology or philosophy are suggested.

History

H. W. CARY, *Adviser*

Courses in history are designed to provide an understanding of man through a study of patterns of development in the past. The study should also give the student an introduction to major problems in world affairs.

A major in history has value to the general student as a humanistic discipline. It has application as preparation for careers in fields of teaching, law, government, journalism, ministry, library and business.

Prospective majors should elect either History 25 and 26 or History 31 and 32 in the sophomore year. Government 25 is recommended. Major students must earn a minimum of 27 credit hours in history from the junior and senior courses. The following courses are required: History 25 and 26, and 31 or 32, and 90. In addition, the student must elect one of the following courses which deals with a period prior to 1500: History 51, 62, or 73; and one seminar course.

Journalism

A. B. MUSGRAVE, *Adviser*

The journalism program is concerned with (1) the study of writing and of communication problems relevant to the media of mass communication, and (2) the best utilization of the University's liberal education resources by students who plan careers in news-

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paper work, communications research, public relations, magazine and radio journalism, or some other field of communications.

For such students the journalism courses are intended to provide both increased communication skill and relevant background. The courses may have special value also for students who plan to go into government service, law, education, and similar fields in which knowledge of the process and effects of communication is particularly useful.

To provide students who have a professional interest in journalism with the broadest and most liberal training, an interdepartmental major is available. These majors take 15 credit hours in journalism, 15 hours of junior-senior courses in one other liberal arts area, and an integrated program of elective courses. Journalism courses taught in other departments, such as Advanced Expository Writing (English 51) and Creative Writing (English 53 and 54), are acceptable in meeting the requirement of 15 credit hours in journalism.

Mathematics

A. E. ANDERSEN, *Adviser*

The department offers courses designed to furnish a cultural background as well as a foundation for both undergraduate and graduate work in such fields of science as physics and chemistry, in engineering and in other technical subjects.

The courses recommended for majors in the department are designed to prepare students for high school teaching, graduate study in mathematics, actuarial work, statistical work, or work in industry.

All majors are required to take Mathematics 29 and 30 and Physics 3 and 4 in the sophomore year. In the junior and senior years each major must take Mathematics 53, 54, 91, and 51 or 56, and must, in addition, complete at least 12 credits in other junior-senior mathematics courses. Prospective majors should consult the department, for a list of recommended courses.

Music

D. J. ALVIANI, *Adviser*

The Department of Music offers both a major program and a program of continuing study for non-majors. The areas covered by courses are: 1) Music Appreciation, Literature, and History, 2) Theory and Composition, 3) Music Education, 4) Applied Music, a) Ensembles, instrumental and choral, b) Individual Instruction in voice, piano, organ and orchestral and band instruments.

Possible fields of concentration are music theory, music history, and music education. In conjunction with other departments, and

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occasionally with nearby colleges, special programs are available in recreation, radio and television, graduate studies, Church Music, Musical Performance, and Music Therapy.

Majors should elect Music 1 and 2 in the freshman year, and Music 53 and 54 in the sophomore year, and are required to take work in both areas 4a and 4b (above) each semester.

Non-major students planning a program of continuing study should elect Music 1 and 29 as early as possible, and must complete a minimum of 15 hrs. apart from areas 4a and 4b above, in which areas they must meet special requirements.

Arrangements for Individual Instruction (area 4b), including those for fees and practice, are made through the Department of Music Office. All credits in area 4b will be recorded, but will not be applicable to graduation credit in excess of 3 hours.

Philosophy

C. SHUTE, *Adviser*

Philosophy seeks a comprehensive understanding of the various areas of man's experience in their interrelatedness. In the context of the historically important theories, the courses concentrate on methods of inquiry into the persisting questions of philosophy, standards of thought, clarification of ethical and aesthetic values, and the basis of criticism.

The student majoring in this subject will complete a minimum of 24 semester hours of credit in philosophy, at least 21 of which must be in courses numbered 50 or above. A wide range of supplementary courses is advised, among which the following are suggested: Art 75, 73; Chemistry 88; Education 51; English 72, 63, 64; French 51, 52; German 56, 57; Government 66, 71, 72; Mathematics 53, 54, 72; Music; Psychology 61, 90; Sociology 53, 82.

Physics

J. D. TRIMMER, *Adviser*

Courses are designed to accommodate students who desire specialized training in physics, and also to provide required or elected courses for students majoring in engineering, mathematics, chemistry, or other fields.

Majors should take Physics 5, 6, 7 and Mathematics 29, 30 or Mathematics 5, 6, beginning if possible at the start of the freshman year. In some cases, the alternative choice of Physics 3, 4 may be acceptable. The freshman year should include Chemistry 3, 4. (For B.A. degree candidates, this means that the History 5, 6 requirement must be met later.) Required upper-division courses are Physics 51, 52, 55, 56, 85, and 86. Mathematics courses should include intermediate or advanced calculus, differential equations, and vector analysis.

Pre-Medical and Pre-Dental CurriculumL. BARTLETT, *Chairman*

Pre-medical and pre-dental students are assigned to faculty advisers for their freshman year. At the end of their second semester, they will be assigned to a member of the Upperclass Committee who will be their adviser for the remainder of the course of study.

Pre-veterinary students may register in the College of Agriculture or College of Arts and Sciences. In the latter case, they will be assigned to advisers in the same manner as the other pre-professional students.

Medical schools do not look with favor on over-specialization in any field. They stress the importance of a broad general education. Since the University requires that every student who graduates must have selected at least 15 credits of junior-senior courses in some one department, the pre-professional student should include courses beyond the introductory level in all fields, especially in the humanities and social sciences. The student decides on his electives only with the advice and consent of his adviser.

PsychologyC. C. NEET, *Adviser*

The courses in the psychology department are planned (1) to impart an understanding of behavior and the application of this knowledge to problems of human adjustment; and (2) to give preparation for professional work in psychology and related fields.

Careers open to psychology majors include: teaching and research, guidance and counseling, psychometrics, child welfare, clinical psychology, school psychology, social work, opinion polling, personnel and industrial work and engineering psychology. Graduate training is required for certain of these careers.

Students planning to major in psychology should take Psychology 27 and 28 in the freshman year. A minimum of 24 additional credits in psychology, including Psychology 51 or 52, and Psychology 90 is required. Appropriate courses in other departments should be elected with the guidance of a departmental adviser.

Majors planning careers primarily in clinical psychology, school psychology and in child welfare should elect specified courses in education, sociology, and zoology. Those planning careers in psychometrics, guidance and counseling, personnel and industrial work and engineering psychology should take certain courses in business administration, economics, education, industrial engineering and sociology; while those planning careers primarily in experimental psychology should plan to take certain courses during their four years in mathematics, physics, and zoology.

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Public Health

R. L. FRANCE, *Adviser*

The curriculum in public health is designed to prepare a student for a health career. Career opportunities are open in: (1) administration of health services; (2) in basic sciences related to health; (3) in environmental health services; (4) in food and drug protective services; (5) in health education; and (6) in health information and communications.

Students electing this major should complete the following courses during their sophomore year: Chemistry 29, Physics 3 and 4, Zoology 35 and Bacteriology 31.

During junior and senior years the following courses should be completed: Chemistry 51 and 52; Bacteriology 81 and 90; Public Health 61, 62, 63, 84, and 88. Students planning graduate work in sanitary engineering must take Mathematics 29 and 30 before the end of their junior year. Supporting courses in other departments will be selected with the guidance of an adviser.

Romance Languages

R. B. JOHNSON, A. HULL, JR., *French Advisers*
J. M. FERRIGNO, S. F. WEXLER, *Spanish Advisers*

Two majors are offered: French and Spanish. The courses of these curricula are intended to give 1) a thorough training in the language skills, 2) an appreciation of the aesthetic and intellectual qualities of the literatures, and 3) a serious insight into the cultures of the nations concerned.

Students majoring in French or Spanish are required to complete 30 approved junior-senior credits (French and Spanish 25-26 credits may be included in the 30), six of which may be in English literature or in another foreign language. All majors, especially those planning to go on to graduate work, are urged to take English 93, Linguistics.

In the last semester of his senior year each major student takes a comprehensive examination treating the entire field of literature. Also, in his senior year, he takes an examination for the "Certificate of Oral Proficiency," which indicates the degree of his language skill at the close of undergraduate study.

Russian

ORRIN FRINK, *Adviser*

Students choosing Russian as their field of major concentration will receive training in reading, writing, speaking and understanding the language, and a knowledge of Russian literature. Russian majors will also acquire the background in Russian history, gov-

ernment and economy necessary for an understanding of the literature and culture of the Russian people.

Russian majors will be prepared to continue their education on the graduate level in the fields of Russian, Slavic Languages and Literatures, or Russian Area Studies.

Russian majors who choose to become teachers or translators will have the necessary preparation and background in the history of the language, or experience in translating scientific, technical and academic material.

Prerequisite to a major in Russian is the successful completion of two years of the language (12 credits): Elementary Russian 1, 2 and Intermediate Russian 5, 6, or their equivalent.

The requirements for the major are: two years of advanced study in the Russian language; two and a half year courses in Russian Literature; one year course in the History of Russia.

At present, University students take their advanced Russian courses at Smith College.

Sociology and Anthropology

J. H. KORSON, *Adviser*

The courses in sociology and anthropology are planned with two aims in view: to give the student an understanding of the factors which influence men in their activities and interests as members of society, and to help prepare students for a wide variety of occupational outlets.

Students interested in teaching at the elementary or high school level should take a minor in the School of Education and at least 6 credits in American history with as many credits in American government as can be arranged.

Of the many opportunities in the field of social work, some are available to college graduates, while others require graduate training in a school of social work.

Aside from opportunities in the business world, many federal agencies and private research organizations seek people who are trained in the research techniques of sociology.

All majors must elect Sociology 25 and 26; Mathematics 1 and 2, or Mathematics 1 and Philosophy 31; and two of the following: Economics 25, Government 25, or Psychology 26; a minimum of 24 and a maximum of 30 Junior-Senior credits in Sociology and Anthropology, of which the following should be taken in the Junior year: Anthropology 63, Sociology 82, and 95. Students who plan to enter the research field or continue their training in sociology or anthropology at the graduate school level, are advised to elect

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Statistics 77 in the Junior or Senior year and to begin to develop a reading knowledge of French and German.

Students majoring in this department must maintain a minimum quality point average of 2.0 (C grade) or better in Sociology and Anthropology courses.

Social Work

J. H. KORSON, *Adviser*

The American Association of Schools of Social Work indicates that the pre-professional subjects most closely related to professional work in this field are economics, political science, psychology, and sociology. The Association recommends that prospective students of social work or social administration take not fewer than 12 semester hours in one of these subjects while taking less in others. It also recognizes the value of courses in biology, history, English, as well as other subjects contributing to a broad cultural background for the student.

Speech

A. E. NIEDECK, *Adviser*

An undergraduate major in speech may be earned by completing thirty semester hours of course work in the department although nine of these may be earned in English and philosophy. Psychology 26 should be elected as a basic requirement. The student must select an area of concentration in (1) Rhetoric and Public Address, (2) Interpretation and Theatre, (3) Radio and Television, (4) Speech Education, (5) Speech and Hearing Therapy. Students concentrating in Speech and Hearing Therapy may fulfill all the certification requirements of the American Speech and Hearing Association and the Massachusetts State Department of Education. Students interested in preparation as public school therapists should plan to minor in the School of Education. For those interested in work in a rehabilitation or hospital setting, a minor in psychology should be planned.

Zoology

G. L. WOODSIDE, *Adviser*

The courses in zoology have two major aims: (1) to offer students an opportunity to develop an understanding and appreciation of the scientific method as a part of a liberal education; and (2) to provide training for prospective graduate students in biology, medicine, dentistry, and related fields, as well as future teachers and laboratory technicians in the biological sciences.

The following courses are required of Zoology majors other than those planning to teach in high school: Zoology 1, 71, 72; Chemistry 1, 2, 29, 33 (or 51, 52); Physics 3, 4; a minimum of one from:

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Zoology 69, 70, 74, and Invertebrate Zoology at Woods Hole; a minimum of one from: Zoology 50, 53; a minimum of two from: Zoology 35, 83, 84.

The following courses are required of Zoology majors planning to teach in high school: Zoology 1, 25, 35; Botany 1, 25, 26; Chemistry 1, 2, 33; Physics 3, 4; Education 51 (junior year); concentrated semester block, Education 52, 85, 88 (senior year); Psychology 56; any fifteen junior-senior credits in Zoology as recommended by the special departmental adviser (especially recommended: Zoology 53, 54, 55, 56, 70, 74, 80 and 81); additional science credits, if desired, recommended from: Entomology 26, Bacteriology 31, Geology 28, Wildlife Management 27, Botany 81, Entomology 79, 90.

COLLEGE OF AGRICULTURE

ARLESS A. SPIELMAN, *Dean*

The College of Agriculture offers a broad general education with specific training in a specialized area. Upon the completion of the requirements for graduation, the student will have devoted about one-quarter of his time to pure science, one-quarter to social and humanistic studies, and about one-half to applied science and technology.

A broad choice of electives within the required courses of each curriculum gives the student the opportunity to prepare for a career in research, industry, business, education, conservation, services, or farming.

Each department of the school has specific requirements for graduation which are included in the descriptive matter under the name of the department.

During the first semester of the freshman year, students interested in teaching vocational agriculture, extension work, or specializing in research work, should consult with the head of the department in which they plan to major.

The College has the following departments: Agricultural and Food Economics, Agricultural Engineering, Agronomy, Dairy and Animal Science, Entomology and Plant Pathology, Food Technology, Forestry and Wildlife Management, Horticulture, Landscape Architecture, Poultry Science and Veterinary Science. Students may major in any of these departments except Veterinary Science; pre-veterinary students are counseled in either Arts and Sciences or Agriculture.

Curricula in Agriculture

Students majoring in Agricultural Engineering follow the program outlined on page 86. All other majors take the following curriculum during the first two years:

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FRESHMAN YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 1, Composition	2	English 2, Composition	2
*Speech 3	2	*Speech 3	2
¹ Mathematics 1, Introductory	3	¹ Mathematics 2 or 4	3
Chemistry 1, General	3	² Chemistry 2, General	3
Botany 1, General	3	² Zoology 1, General	3
Military or Air Science 1 (men)	1	³ Elective	3
Food Economics 1	2	Military or Air Science 2 (men)	1
Physical Education 1, 2 (men)	2	Physical Education 3, 4 (men)	2
Physical Education 5, 7 (women)	2	Physical Education 6, 8 (women)	2

¹ Candidates for the Bachelor of Vocational Agriculture degree must take Mathematics 01 (in place of Mathematics 1) and either Mathematics 12 or 1 (in place of Mathematics 2).

² Landscape Architecture majors will take Landscape Architecture 2 (in place of Chemistry 2) and Sociology 25 (in place of Zoology 1).

³ Elective may be any freshman or sophomore course—most will elect Animal Husbandry 2, Horticulture 2, Entomology 26 or Forestry 26. Some majors in Wildlife Management, Food Management, or Food Technology may prefer a year of foreign language to the Food Economics 1-elective sequence. Food Distribution majors will take Bacteriology 31.

* May be taken either semester or during a later year. Those excused from Speech 3 must take Speech 91 prior to graduation.

SOPHOMORE YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 25, Humane Letters	3	English 26, Humane Letters	3
A Social Science	3	A Social Science	3
A Natural Science or Math.	3-4	A Natural Science or Math.	3-4
¹ Electives	6	¹ Electives	6
Military or Air Science 25 (men)	1	Military or Air Science 26 (men)	1
Physical Education 25, 27 (women)	2	Physical Education 26, 28 (women)	2
Physical Education 31, 32 (men)	2	Physical Education 33, 34 (men)	2

¹ The student will be guided in his selections by his major adviser.

(Note) There may be some departures from this program for those majoring in Landscape Architecture, Agricultural Business, and Food Distribution.

JUNIOR-SENIOR CURRICULA

At the end of the sophomore year each student selects one of the following curricula as his major to complete his collegiate training.

AGRICULTURE

Agricultural Business

JOHN BLACKMORE, *Adviser*

This curriculum is designed 1) to prepare students for employment in executive positions with firms related to agriculture or for administrative positions with governmental agencies concerned with agriculture and 2) to give the essential undergraduate preparation for a career in agricultural economics, in research, teaching, or extension work. The course of study, which leads to the degree of Bachelor of Science, combines training in technical agricultural sciences with courses in business management and economics. The resources of the College of Arts and Sciences and of the School of Business are used in addition to those of the College of Agriculture in order to provide a body of course work which gives the student substantial technical training within the framework of a liberal college education.

In the first semester of their sophomore year, students will elect either Mathematics 29 or Mathematics 55, Economics 25 and a course selected from one of the agricultural sciences with the aid of the adviser. In the second semester of the sophomore year, students will elect Agricultural Economics 26, either Psychology 26 or Sociology 25, and either Economics 12 or History 26.

In the Junior and Senior years, students will take Agricultural Economics 75 and 76, or 55 and 97, Agricultural Economics 56, 71, and 95, Statistics 79 and 80, Economics 73 and an additional 9 hours of economics, six hours in business management or accounting and 6 hours in technical agricultural subjects.

Agricultural Engineering

R. W. KLEIS, *Adviser*

Agricultural engineering is concerned with the application of scientific engineering principles to agricultural production and related agricultural industries. This professional field includes engineering activities related to the design, development and use of mechanical and electrical equipment; farm structures; and soil and water control systems for the production, processing and preservation of agricultural products and the improvement of rural living. Agricultural engineers are employed by a variety of agricultural industries and organizations for research, development, teaching, and promotional activities.

The program is designed to provide sound training for the agricultural engineering profession. The student majoring in this field will take his freshman and sophomore work at the University and then, under a cooperative agreement, complete his Bachelor of Science program at the University of Maine.

AGRICULTURE

FRESHMAN YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 1, Composition	2	English 2, Composition	2
Speech 3	2	Math. 6, Diff. Calculus	4
Math. 5, Analy. Geom.	4	Chem. 2 or 4, General	3
Chem. 1, General	3	Mech. Engin. 2, Drawing	3
Mech. Engin. 1, Drawing	2	Physics 6, General	3
Physics 5, General	3	Military or Air Science 2	1
Military or Air Science 1	1	Physical Ed. 3, 4	2
Physical Ed. 1, 2	2		

SOPHOMORE YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 25, Humane Letters	3	English 26, Humane Letters	3
Math. 31, Integ. Calculus	4	Math. 32, Diff. Equations	4
Physics 7, General	4	Psych. 26 or Soc. 25	3
Civil Engin. 31, Surveying	3	Agric. Elective	3
Mech. Engin. 35, Engin. Mat'l.	4	Elective	4
Military or Air Science 25	1	Military or Air Science 26	1
Physical Ed. 31, 32	2	Physical Ed. 33, 34	2

JUNIOR AND SENIOR YEARS

At the University of Maine.

(*Consult Agricultural Engineering Department for details.*)

Agronomy

WILLIAM G. COLBY, *Adviser*

The curricula provide basic education and training in soil science, crop science and agrostology. There is sufficient flexibility within the curricula to allow specialization in crops, soils or fine turf.

The core of each curriculum requires those science courses which are basically educational and qualify the individual for investigational, educational or vocational employment in industrial, government or private organizations. Agronomy majors are required to take Agronomy 22, 57, 59, 65, 84; Botany 67; Chemistry 29, 33; Entomology 26; Horticulture 2, 62; Physics 3, 4; Plant Pathology 51, and Zoology 53. They must also successfully complete the courses listed below for one of the specialized areas of study:

Crop Science:

Agronomy 51, 52; Animal Science 51; Entomology 52

Soil Science:

Agronomy 51, 52, 84B; Chemistry 32

Agrostology:

Agricultural Engineering 55, 72; Agronomy 53, 56, 98.

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Animal Science

D. J. HANKINSON, *Adviser*

The animal science curriculum is designed to provide the student with fundamental training in the nutrition, physiology, breeding, selection and management of farm animals. To this purpose all students are expected to take Animal Science 51, 65, 66, 75 and 96; either Animal Science 56 or 78; Zoology 35 and 53; and Bacteriology 31. They also must successfully complete one summer of placement training (in farming, industry or research as determined in consultation) before graduation.

The curriculum is made flexible by permitting specialization in optional fields which prepare the student for positions in dairy or livestock production and marketing, in agribusiness or in education and extension, through electives chosen from the fields of agronomy, agricultural engineering, economics and veterinary medicine. Options emphasizing basic sciences are also available for those preparing themselves for graduate work in such specialized areas of animal science as nutrition, physiology of reproduction or genetics.

Suggested supporting courses and program schedules for the various optional fields of specialization are available from the adviser.

Dairy Technology

D. J. HANKINSON, *Adviser*

Major students in dairy technology receive training in the testing, handling, and processing of milk, ice cream, butter, cheese, and other milk products. Practical application is made of chemistry, bacteriology, economics, and engineering in the many phases of dairy work.

Dairy technology graduates may secure responsible positions with commercial dairy manufacturing firms, or with equipment and supply firms. Opportunities are offered in the fields of extension, research, and for sanitation and public health work with city, state or federal agencies.

Major students in dairy technology must successfully complete one summer of placement training in a dairy plant. It is recommended that this requirement be met during the summer immediately following the sophomore year of University residence.

In the junior and senior years, Agricultural Engineering 81 and 82; Bacteriology 61, 81, 90; Chemistry 51, 52; and Dairy 52, 75, 77, 78, 95 and 96 are required. Recommended electives are courses in Bacteriology, Food Technology, and Business Administration.

AGRICULTURE

Entomology

J. H. LILLY, *Adviser*

Courses in entomology acquaint students with all phases of insects and insect control, as well as beekeeping. Trained entomologists find positions in public service and industry, such as teaching at all levels; research, quarantine and regulatory work in State or Federal Service; various roles in public health and pest control activities; research, sales and public relations work in the agricultural chemicals industry; and commercial beekeeping.

Entomology majors are expected to take Entomology 26 in the freshman or sophomore year and Chemistry 29 or 33 in the sophomore year. Recommended sophomore electives are: Botany 25, Zoology 25 or 35, Physics 3, Bacteriology 31, modern language.

In the junior and senior years Entomology 53, 55, 56, 57, 66, 81, Statistics 77, and Zoology 53 are required. Recommended electives are: Entomology 60, 72, 74, 79, 83, 85, 90, Plant Pathology 51, 52, Botany 66, 67, Statistics 80, Zoology 51, 69, 70, 74, 84, Forestry 26, 56, 59, chemistry, modern language.

Food Distribution

JOHN BLACKMORE, *Adviser*

This course of study is designed to prepare students for careers in management in the food industry and in government agencies concerned with food production, processing and marketing. The curriculum leads to the degree of Bachelor of Science. Substantial emphasis is given to training in the scientific and technical principles that underlie modern food processing and marketing. In addition, the curriculum includes courses in business management and in economics plus specialized courses in food marketing and merchandising.

Students following this program of study should take Bacteriology 31 in the second semester of their freshman year. In subsequent years they take Economics 25, and 79, Agricultural Economics 26, Food Economics 75 and 79, 95 and 96, Accounting 25, Food Technology 75, Agricultural Engineering 80, Statistics 79, Business Management 61, Business Law 70, Business Management 64, plus 15 hours in elective courses selected with the help of the adviser from the University's offerings in the agricultural and food sciences and 6 hours selected in business administration.

Food Management

N. G. COURNOYER, *Adviser*

The curriculum in food management is offered by the food technology department. The program is designed to give the student a general well-rounded background of arts and sciences,

AGRICULTURE

coupled with training in subjects useful to the hotel and restaurant industries. The nature of the food service industry requires persons with broad, general backgrounds of business training coupled with a scientific knowledge of foods.

In the sophomore year food management majors should take Food Management 33, Chemistry 33, and Accounting 25 the first semester and Home Economics 30, Bacteriology 31, and Accounting 26 the second semester.

Two summers, of a minimum of eight weeks each, of practical restaurant experience are strongly recommended and should be completed before registering for the last year.

JUNIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Home Ec. 92, Quantity Foods	3	Home Ec. 52 or 54, Nutrition	3
Food Tech. 75, Food Preservation	3	Accounting 72, Adm. Acct. & Control	3
Gen. Bus. 71, Bus. Law I	3	Ent. 60, Pest Control	2
Food Mgt. 77, Food Serv. Pract.	3	*Electives	8
Agr. Eng. 53, Food Equipment	3		

SENIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Food Mgt. 71, Seminar	2	Food Mgt. 72, Seminar	2
Home Ec. 71, Food Buying	3	Food Mgt. 78, Stewarding	3
Finance 65, Corp. Finance	3	Food Mgt. 82, Laws of Innkeeping	3
Statistics 79, Elem. Econ. Stat.	3	Pub. Health 63, Ind. Hyg. & Sanit.	3
Food Mgt. 81, Hotel Pract.	3	*Electives	6
*Elective	3		

* The student will be guided in his selection by his major adviser.

Food Technology

W. B. ESSELEN, *Adviser*

The department of food technology offers two curricula: Food Management (page 83) and Food Technology.

The curriculum in food technology provides scientific and applied training in the principles concerned with the processing, preservation, and packaging of foods and food products. The student's background in chemistry, physics, and bacteriology is applied to food technology problems and food analysis. Major fields open to graduates include: (1) technical and production work in the food industries; (2) control and analytical work related to food products; (3) government food inspection and grading; (4) technological work and research in government, industry, and education.

The selection of supporting courses depends upon the objective of the student, which should be determined as early as possible.

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Food technology majors should take Physics 3 and 4 and Chemistry 29 and 32 in the sophomore year; also, if possible, Bacteriology 31. Students planning to take Physical Chemistry should complete Mathematics 29 and 30.

JUNIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Food Tech. 51, Introductory	3	Food Tech. 52, Food Prod.	3
Chemistry 51, Organic	4	Chemistry 52, Organic	4
Bacteriology 51	3	Bacteriology 82, Applied	3
Agr. Engin. 81, Food Process Eng. I	3	Agr. Engin. 82, Food Process Eng. II	3
*Electives		*Electives	

SENIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Food Tech. 61, Industrial Technology	3	Food Tech. 62, Industrial Technology	3
Food Tech. 95, Food Science Literature	2	Food Tech. 96, Food Science Literature	2
Food Tech. 91, Analysis of Food Prod.	4	Food Tech. 92, Anal. Meth. & Instrumentation	3
Chemistry 79, Elem. Biol. or	4	*Electives	
Chemistry 65, Physical	3		
*Electives			

* The student will be guided in his selection by his major adviser.

Forestry

A. D. RHODES, *Adviser*

The technical curriculum in forestry is concentrated in the field of forest production and management, and leads to the degree of Bachelor of Science. It has professional status, being accredited by the Society of American Foresters. Graduates are prepared for employment with Federal and State agencies and in private industry. The curriculum emphasizes the multiple-use concept of forest land management, and stresses the scientific and economic foundations of forestry rather than methods. The first two years are devoted largely to science, English, and other cultural-foundational subjects, the last two years mainly to professional subjects of the major.

Following the sophomore year students are encouraged to undertake summer work giving practical field experience in forestry.

Majors in forestry take Forestry 55, 78, and Civil Engineering 27 during nine weeks in the summer following the freshman year; Forestry 25, Physics 3 and 4, Economics 25, Entomology 26, Agronomy 22, Geology 50, and Botany 67 in the sophomore year; Forestry 53, 54, 56, 59, 74, 75, and 84, plus social science and humanities requirements in the junior year; and Forestry 57, 71, 80, 81, and 82, Plant Pathology 69, Entomology 72, and Wildlife Management 72 in the senior year.

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Horticultural Science

A. P. FRENCH, A. W. BOICOURT and G. B. SNYDER, *Advisers*

The major in Horticultural Science permits specialization in any one of the following areas: Floriculture, Olericulture, Pomology. Each of these areas provides basic training in the scientific principles and applied practices relative to the production and marketing of their respective crops—flowers, vegetables, and fruits. Principal areas of employment open to graduates include: (1) teaching in secondary schools; (2) wholesale and retail marketing; (3) service personnel for industrial concerns manufacturing equipment and supplies used in the production and distribution of horticultural crops; (4) commercial production; (5) graduate study leading to professional careers in college teaching, research, and extension with state, federal or private agencies. Each program of specialization also provides ample opportunity for supporting elective courses which will better fit the student for his special objective.

Students who have had no practical experience in the area of their specialization will be required successfully to complete one summer of placement employment in a phase of the flower, fruit or vegetable industry approved by their major adviser. This requirement should be met before the beginning of the junior year.

The following courses in Horticultural Science constitute a "core" required of all students majoring in the department: Horticulture 29, 31, 32, 54, 73, 95 and 98. Course offerings within the areas of specialization are as follows:

Floriculture — Horticulture 55, 75, and 76.

Olericulture — Horticulture 53, 65, and 74.

Pomology — Horticulture 27, 28, and 97.

Students majoring in Horticultural Science will take the following courses in their freshman year: first semester—English 1, Mathematics 1, Chemistry 1, Botany 1, Government 25; second semester—English 2, Mathematics 2 or 4, Chemistry 2, Zoology 1, Horticulture 2, Speech 3; plus Physical Education and Military.

The following required courses should be taken during the sophomore year: first semester—English 25, Geology 1, Botany 67, Horticulture 31, and Horticulture 29 (or 27); second semester—English 26, Economics 25, Agronomy 22, Chemistry 27 or 33, and Horticulture 32 (or 28).

AGRICULTURE

JUNIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Social Science	3	Humanities	3
Entomology 26, General	3	Hort. 54, Herbaceous Plants	3
Agronomy 59, Soil-Plant Mineral Nutrition	3	Horticulture elective	3
Horticulture elective	3	Electives	6
Electives	3		

SENIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Zoology 53, Genetics	3	Hort. 62, Plant Breeding	3
Plant Pathology 51, General	3	Hort. 98, Special Problems	3
Hort. 95, Seminar	1	Horticulture elective	3
Hort. 73, Produce Marketing	3	Electives	6
Horticulture elective	3		
Elective	3		

The choice of electives will be based on the individual student's objectives. Their selection will be under the guidance of the adviser in the area of specialization.

Landscape Architecture

R. H. OTTO, *Adviser*

Students following this curriculum, which requires 125 credits for graduation, are prepared to take up work in landscape architecture, which leads through field experience or post-graduate study to permanent establishment in the profession.

Sophomores in the first semester will elect Geology 50, Civil Engineering 27, Art 33, and Landscape Architecture 23. In the second semester they will take Landscape Architecture 24, 28, and 30, and one of the following: Botany 26, Entomology 26, Agronomy 22. Government and a second social science are taken in the junior year.

JUNIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Land. Arch. 53, Applied Des.	4	Land. Arch. 54, Intermed. Des.	4
Land. Arch. 55, Constr. Det.	4	Land. Arch. 74, City Plan.	3
Land. Arch. 59, Plant Mat'l	3	Land. Arch. 68, Architecture	3
Land. Arch. 67, Architecture	3	Econ. 25 or Psych. 26	3
Government 25, Amer. Govt.	3	*Elective	3

SENIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Land. Arch. 71, Plant Des.	3	Land. Arch. 82, Adv. Des.	4
Land. Arch. 81, Adv. Des.	4	Land. Arch. 84, Presentation	2
*Electives	9	Land. Arch. 92, Prof. Prac.	1
		*Electives	9

* Electives are chosen subject to the approval of the adviser.

Suggested electives: Agr. Engin. 51, Agronomy 22, Agrostology 53, 56, Arboriculture 51, Art 14, 34, 51, 52, Botany 81, Civil Engineering 90, Horticulture 31, 54, Forestry 71, Landscape Architecture 73, 75, 76, Philosophy 82.

AGRICULTURE

Plant Pathology

W. M. BANFIELD AND
R. A. ROHDES, *Advisers*

Plant pathology is concerned with the nature and control of plant diseases caused by fungi, viruses, bacteria, nematodes, certain higher plants and unfavorable environmental conditions. Plant pathologists fill positions in public service and in industry, such as teaching at all levels; research in state, federal, university, and industrial laboratories and experiment stations; and extension service through federal, state, and county organizations. They are employed in quarantine and regulatory work, in various roles in plant disease control, and in sales and public relations work in agricultural chemical industries.

Recommended electives for plant pathology majors in the sophomore year are: sophomore botany courses, Entomology 26, and modern language.

In the junior and senior years Plant Pathology 51, 69, and 52 or 90, Botany 57, 66, 67, Chemistry 33 or 52, Zoology 53, Horticulture 62, Statistics 77 are required. Recommended electives are: Plant Pathology 75, 90, Botany 59, 60, 61, 62, 81, 82, Bacteriology 55, Statistics 80, Entomology 55, 72, 74, 80, modern language.

Poultry Science

T. W. Fox, *Adviser*

Two general areas of study are available to the student majoring in this department depending on interests and abilities.

(1) Poultry Production and Management—This plan of study will prepare students for farm operations either as owners or managers; as servicemen, specialists and managers in industrial fields; and for federal and state extension work and regulatory programs allied to the poultry industry. The program is supported by electives in business, agricultural economics and communicative skills.

(2) Poultry Science—This program is primarily for students interested in and capable of graduate work leading to careers in poultry science teaching and research and as agricultural scientists with breeding organizations, feed manufacturers and pharmaceutical corporations. Students interested in poultry science supplement the basic curriculum with basic sciences chosen to support further study in poultry genetics, physiology, nutrition and products technology.

Veterinary Science

Though major work in Veterinary Science is not available, the department offers supporting courses to assist students who expect

AGRICULTURE

to enter the various fields of agriculture, wildlife management, public health, teaching and laboratory work in the biological sciences.

Wildlife Management

FREDERICK GREELEY, *Adviser*

Wildlife management is concerned with the production and control of animal populations on farms, forests, waste lands and water areas. Thus an understanding of both the origin and management of land and water is necessary. These background phases include geology, agronomy, forestry, and agriculture. Fields of specialization include game and furbearer management, control of injurious animals, and related fields.

Studies in wildlife management are closely correlated with the work of the Massachusetts Department of Natural Resources and the U. S. Fish and Wildlife Service. During the junior and senior years trips are taken to numerous wildlife projects in the state.

Graduates in this field are eligible for both state and federal civil service examinations, and most of the permanent job opportunities are in public service. Training in the wildlife field is excellent background for teaching in the public schools and for employment as conservation officers.

The courses during the first two years are basic educational subjects. Sophomores take Geology 1, Zoology 35, Wildlife Management 27, Agronomy 22, Entomology 26, and Forestry 26. During junior and senior years major students take Wildlife Management 70, 71, 74, 75 and 84, and Forestry 55, 56, and 71, and Botany 81.

SCHOOL OF BUSINESS ADMINISTRATION

H. B. KIRSHEN, *Dean*

The School of Business Administration prepares students to take advantage of important economic opportunities and eventually to assume positions of responsibility in business. The School's educational program is directed toward the professional aspects of business, encouraging high standards of ethical conduct, broad social responsibilities and the development of competence in particular courses of study of the student's own interest, aptitude and choice.

The first two years emphasize general education by providing fundamental courses in the humanities, mathematics, science and social science. In addition, basic courses in accounting and economics prepare the student for further work in the School of Business Administration. The first two years are largely prescribed.

The junior and senior years emphasize a greater degree of specialization and provide for this in the programs indicated below. But even in these last two years all students need to view business as a whole in so far as a "core" of courses can do this. This "core" of courses is listed below under the junior-senior curricula and is required of all students.

A total of at least 120 credit hours is required for graduation exclusive of credit received in the required military and physical education courses.

Each course of study leads to the degree of Bachelor of Business Administration.

Beginning with the class of 1962, the passing of a comprehensive examination is a requirement for a degree for majors in the department of accounting. Comprehensive examinations may also be required by other departments of the School.

Beginning with the class of 1964 all students in the School of Business Administration must attain, as a graduation requirement, a 2.0 average in Accounting 25 and 26, Elementary Economic Statistics 79, and the junior "core" courses: (Finance 55, Financial Institutions; Finance 65, Corporation Finance; General Business 71, Business Law I; Management 61, Principles of Management; and Marketing 53, Principles of Marketing). The "core" must be completed by the end of the junior year unless a student, on recommendation of his department chairman, has received permission from the Dean to postpone any such course to the senior year.

Students transferring to the School of Business Administration from any School or College within the University shall receive junior and senior elective credit only for those courses passed with a grade of C or better.

BUSINESS ADMINISTRATION

The School of Business Administration is a member of the American Association of Collegiate Schools of Business.

FRESHMAN YEAR

In each subject a one year sequence is required.

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 1	2	English 2	2
*Speech 3	2	*Speech 3	2
Mathematics	3-4	Mathematics	3-4
Hist. 5, 25, or Govt. 25	3	Hist. 6, 26, or Govt. 26	3
Science: elect one	3	Science: continue 1st sem. sci.	3
Chemistry 1		Chemistry 2	
Physics 3		Physics 4	
Botany 1		Botany 25	
Geology 1		Geology 2	
Zoology 1		Zoology 25 or 35	
‡Elective	3	‡Elective	3
Military or Air Science 1	1	Military or Air Science 2	1
Physical Ed. 1, 2 (men)	2	Physical Ed. 3, 4 (men)	2
Physical Ed. 5, 7 (women)	2	Physical Ed. 6, 8 (women)	2

* May be taken either semester.

‡ If a language is elected the student must complete the intermediate year to meet the basic School requirement.

If a language is not elected:

Where Government has been elected the student shall elect one of the following: History 5, 6, 25, 26, Economics 12.

Where History has been elected the student shall elect Government 25.

The student shall select, with the help of an adviser, a one-semester elective.

SOPHOMORE YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 25, Humane Letters	3	English 26, Humane Letters	3
Economics 25, Elements	3	Economics 26, Prob. of Nat'l Economy	3
*Accounting 25 or 27, Introduction	3 or 5	*Accounting 26, Introduction II	3
Psychology 26, General	3	Sociology 25, Introduction to	3
**Statistics 79	3	Elective	3
Military or Air Science 25	1	Military or Air Science 26	1
Physical Ed. 31, 32 (men)	2	Physical Ed. 33, 34 (men)	2
Physical Ed. 25, 27 (women)	2	Physical Ed. 26, 28 (women)	2

* Accounting 27 (5 credits) may be elected in place of Accounting 25 and 26.

** Statistics may be taken either semester, or, with the adviser's consent, may be deferred to the junior year in which case it becomes one of the required "core" courses of the junior year.

JUNIOR-SENIOR CURRICULA

Courses and major programs are listed under four departments in the School of Business Administration: Accounting, General Business and Finance, Management, and Marketing. Irrespective of any major selected a certain "core" of courses is required of all students.

BUSINESS ADMINISTRATION

<i>Required Core Courses</i>	<i>Credits</i>
Fin. 55, Financial Institutions	3
Fin. 65, Corporation Finance	3
Gen. Bus. 71, Business Law	3
Mgt. 61, Principles of Management	3
Mkt. 53, Marketing Principles	3

Elective courses shown in major programs are selected with the aid and consent of the student's adviser.

Accounting

J. W. ANDERSON, *Chairman*

The accounting program is designed to prepare students for public accounting and for positions as accountants in business, industry and government.

	<i>Credits</i>
Required "core" courses	15
Required courses in the major:	15
Acct. 61, Intermediate Accounting	
Acct. 62, Advanced Accounting	
Acct. 63, Cost Accounting	
Acct. 73, Federal Income Tax Procedures	
Gen. Bus. 72, Business Law II or Gen. Bus. 73, Business Law III	
Two elective courses in Accounting	6
Three elective courses	9
Five elective courses outside Business Administration	15

General Business and Finance

J. B. LUDTKE, *Chairman*

The department has three major programs: *Finance, Business Administration and Economics*, and *General Business*. The curriculum in finance is directed towards the fields of banking, investment, brokerage, insurance or governmental agencies concerned with finance. The curriculum in Business Administration and Economics comprehends a wider field to balance a knowledge of both economics and business. The curriculum in General Business was designed for students who do not wish to specialize in any particular field.

<i>Curriculum in Finance</i>	<i>Credits</i>
Required "core" courses	15
Required courses in the major:	18
Econ. 56, Business Fluctuations and Forecasting	
Econ. 73, Modern Economic Theory and Analysis	

BUSINESS ADMINISTRATION

Credits

Fin. 75, Principles of Insurance	
Fin. 81 and 82, Problems in Business Finance I and II	
Fin. 83, Investments	
Four elective courses from a recommended list	12
Five elective courses outside Business Administration	15
<i>Curriculum in Business Administration and Economics</i>	
Required "core" courses	15
Required courses in Economics:	15
Econ. 56, Business Fluctuations and Forecasting	
Elect one:	
Econ. 70, The Structure of American Industry	
Econ. 77, Economics of International Trade	
Econ. 83, Social Control of Business	
Econ. 73, Modern Economic Theory and Analysis	
Econ. 78, Public Finance	
Econ. 79, Labor Problems	
Two elective courses in Business Administration:	6
Accounting, General Business, Management and/or Marketing	
Two elective courses from the areas of:	6
Economics, Business Law, Statistics and Independent Research	
One elective course	3
Five elective courses outside the fields of Business Administration and Economics	15
<i>Curriculum in General Business</i>	
Required "core" courses	15
Required courses in the major:	9
Gen. Bus. 72 or 73, Business Law	
Stat. 80, Advanced Statistics	
Elect one in senior year:	
Acct. 72, Administrative Accounting	
Fin. 81, Problems in Business Finance I	
Mgt. 96, Problems in Management	
Mkt. 80, Problems in Marketing	
Three elective courses in Business Administration	9
Two or three courses in Economics	6-9
One or two courses in Government, Sociology, and/or Psychology	3-6
Five elective courses outside Business Administration and Economics	15

BUSINESS ADMINISTRATION

Management

J. T. CONLON, *Chairman*

Industry and business offer qualified students an opportunity to find careers in General Management, Production Management, and in Personnel Management and Industrial Relations. Course programs are offered in each of these fields and provide the student both a specialized and a comprehensive understanding of the managerial process in industrial enterprises.

	<i>Credits</i>
Required "core" courses	15
Required courses in the three major programs:	12
Mgt. 64, Personnel Management	
Mgt. 81, Theory of Business Administration	
Mgt. 85, Management of Production	
Mgt. 96, Problems of Management	
Seven elective courses from a recommended list	21
Four elective courses outside Business Administration	12

Marketing and Merchandising

H. E. HARDY, *Chairman*

Students in marketing prepare for a variety of positions in wholesale and retail enterprises and in the sales activities of manufacturers. The program includes specialized study of basic types of market operations such as advertising, sales management and retailing.

<i>Curriculum in Marketing</i>	<i>Credits</i>
Required "core" courses	15
Required courses in the major:	15
Mkt. 54, Sales and Sales Management	
Mkt. 62, Marketing Research	
Mkt. 71, Retail Merchandising	
Mkt. 73, Advertising	
Mkt. 80, Problems in Marketing	
Three elective courses from a recommended list	9
Two elective courses	6
Five elective courses outside Business Administration	15

<i>Curriculum in Merchandising</i>	<i>Credits</i>
Required "core" courses	15
Required courses in the major:	18
Art 14, Introduction to Art	
Mkt. 62, Marketing Research	

BUSINESS ADMINISTRATION

Credits

Mkt. 71, Retail Merchandising	
Mkt. 73, Advertising	
Mkt. 79, Wholesaling	
Mkt. 80, Marketing Problems	
Two elective courses from a recommended list	6
Two elective courses	6
Five elective courses outside Business Administration	15

SCHOOL OF EDUCATION

A. W. PURVIS, *Dean*

The School of Education through its undergraduate program seeks to utilize the forces of the University to prepare teachers for elementary and secondary schools and through its graduate offering to prepare administrators and specialists in public education. Its program is based upon the assumption that teachers and other school personnel should have a broad liberal education, considerable mastery of at least one field, and professional courses which should lead to a knowledge of the persons to be taught, familiarity with the problems to be met, and practice in the best techniques of teaching and supervision. In all of this the School of Education takes the position that teacher education is a University function and that success will come only if the School is successful in maintaining the closest possible relationships with other schools and departments that contribute to the program.

All students who contemplate teaching as a career should register early, in their freshman year if possible, with the School of Education although their courses in education do not begin until the junior year. In general, students are admitted without question to the various service courses of the junior and senior years, but admission to the teacher-training program of the concentrated semester block is determined by a composite rating based on scholarship as shown by University grades (a three-year average at least as high as the University median is desired), success in the beginning courses in education, recommendations of University teachers in general education fields, and personality ratings by members of the staff.

Elementary School Teaching

Candidates for this program major in elementary education. In certain cases, with the approval of the Dean of the School of Education, the student may be permitted to major in some department of the College of Arts and Sciences where the general education program is deemed the equivalent of that designed for elementary education majors. This permission should be requested in freshman year. Such students will satisfy the requirements of their major department so far as the first two years are concerned but they should utilize their electives to take such courses as Government 25, Zoology 54, History 25, 26 and Art or Music which are recommended by the School of Education. They should take Education

EDUCATION

9, 39, 59. The core program for elementary education majors including Education 51 and 64, and Psychology 65 or Home Economics 70, and the Elementary Education Block should be taken in the junior and senior years.

Students with a major in Elementary Education take the following courses:

FRESHMAN YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 1	2	English 2	2
*Speech 3	2	*Speech 3	2
Math. 1 or Chem. 1	3	Math. 2 or 4 or Chem. 2	3
Zool. 1 or Bot. 1	3	Bot. 1 or Zool. 1	3
**Foreign Lang.	3	**Foreign Lang.	3
History 5	3	History 6	3
#Education 9		#Education 9	
Military or Air Science 1 (men)	1	Military or Air Science 2	1
Phys. Ed. 1, 2 (men)	2	Phys. Ed. 3, 4 (men)	2
Phys. Ed. 5, 7 (women)	2	Phys. Ed. 6, 8 (women)	2

* May be taken either semester.

** Intermediate Proficiency Required.

To be completed in a school year.

SOPHOMORE YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 25	3	English 26	3
Psychology 26	3	Sociology 25 or Econ. 25	3
*Science	3 or 4	Zool. 54	3
Government 25	3	Music 29 or Art 14	3
History 25	3	History 26	3
#Education 39		#Education 39	
Military or Air Science 25 (men)	1	Military or Air Science 26 (men)	1
Physical Ed. 31, 32 (men)	2	Physical Ed. 33, 34 (men)	2
Physical Ed. 25, 27 (women)	2	Physical Ed. 26, 28 (women)	2

* To be chosen from sophomore courses in the College of Arts and Sciences.

To be completed in a school year.

JUNIOR AND SENIOR YEARS

During junior year the student takes Education 51, 59, 64, Psychology 65 or Home Economics 70. One semester of senior year is devoted to the concentrated Elementary Education Block (Ed. 60, 61, 62, 85). Majors are expected to utilize their junior and senior electives to take at least 30 credits in the College of Arts and Sciences, of which at least 15 credits should be concentrated in a minor.

Secondary School Teaching

All candidates for secondary school teaching will major in the subject field to be taught and minor in education. A maximum of eighteen hours should be taken in this minor. Education 51 and Psychology 56 are required during junior year and Education 52, 88, 85 (called the secondary block) in one semester of senior year.

EDUCATION

Since the concentrated semester block in secondary school teacher-training carries only twelve credits students should consult with their major adviser regarding means of making up the extra three credits, and of meeting all their major requirements in the three semesters of junior and senior years.

Special Field Programs for Prospective Teachers

In Vocational Agriculture (R. C. Jones, adviser). This program is based on a cooperative agreement between the University and the Vocational Division of the State Department of Education which provides supervisors and consultants in conducting the program. Students otherwise qualified may prepare to teach vocational agriculture by the satisfactory completion of Education 72, 73, and 75. Education 52 is also recommended. To insure a desirable range of preparation, students who contemplate vocational teaching should consult, early in the freshman year if possible, Professor Jones and Mr. Taft.¹ A vocational teacher-training certificate is awarded by the Vocational Division to those who fully qualify.

In Home Economics (Mrs. Sullivan, adviser). These students will major in home economics and minor in education. They should elect Education 51, Psychology 56, Home Economics 81 and the concentrated semester block (Education 52, 85).

In Teacher Coaching (S. W. Kauffman, adviser). These students will major in physical education and minor in education. They should elect Psychology 56 and the concentrated semester block (Education 52, 88, 85). They should elect a minor teaching field from the College of Arts and Sciences consisting of a minimum of eighteen hours.

In Music (D. Alviani, adviser). These students will major in music and minor in education. They should elect Education 51, Psychology 56, Music 87, and the concentrated semester block (Education 52, 85).

¹ Mr. J. A. Taft is State Supervisor for Agricultural Teacher-Training representing the Vocational Division of the State Department of Education in the administration of vocational agricultural acts.

SCHOOL OF ENGINEERING

G. A. MARSTON, *Dean*

The departments of chemical engineering, civil engineering, mechanical engineering and electrical engineering comprise the School of Engineering. Each department offers a curriculum leading to a Bachelor of Science degree in that particular branch. An optional curriculum in industrial engineering is offered in the mechanical engineering department.

All curricula are accredited by the Engineers Council for Professional Development.

Engineering can be defined as the combination of science and art by which materials and power are made useful to mankind. An engineer requires intensive technical training but at the same time he should acquire the broad education that distinguishes the professional man from the technician. His education does not end with formal schooling but continues throughout his life as he accumulates experience.

The curricula in engineering have been carefully prepared to offer each student the opportunity to acquire the sound training in mathematics and the basic sciences of chemistry and physics upon which is built the work in the engineering sciences. In the senior year courses are offered which enable the student to use his previous training for engineering analysis, design and engineering systems in his particular field of interest. About twenty per cent of his time is devoted to studies in the social science and humanistic area. Some opportunity is provided to elect courses from both the technical and humanistic-social fields.

The curriculum of the freshman year is the same for all. Specialization to a limited extent begins in the sophomore year.

FRESHMAN YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 1, Composition	2	English 2, Composition	2
Speech 3	2	Mathematics 6, Calculus	4
Mathematics 5, Analy. Geom. and Calc.	4	*Chem. 2 or 4, General	3 or 4
*Chem. 1, General	3	Mechanical Engr. 2, Drawing	3
Mechanical Engineering 1, Drawing	2	Physics 6, General	3
Physics 5, General	3	Military or Air Science 2	1
Military or Air Science 1	1	Physical Ed. 3, 4	2
Physical Ed. 1, 2	2		

* It is recommended that Chemical Engineering majors take Chemistry 3 and 4 in place of Chemistry 1 and 2.

ENGINEERING

SOPHOMORE-JUNIOR-SENIOR CURRICULA

Majors in Engineering will select one of the following curricula.

Chemical Engineering

E. E. LINDSEY, *Adviser*

Chemical Engineering is concerned with the development of manufacturing processes in which chemical or certain physical changes of materials are involved. These are resolved into a coordinated series of unit operations (physical changes) and unit processes (chemical changes). The work of the chemical engineer is primarily concerned with the design, construction, and operation of equipment and plants in which these are applied. Chemistry, physics, and mathematics are the underlying sciences of chemical engineering, and economics is its guide in practice.

Chemical engineers are employed not only in industries manufacturing chemicals but in many others, such as petroleum refining, coal processing, refractories and clay products, cement, waste treatment, pulp and paper, rayon and textiles, paint and varnish, natural and synthetic rubber, foods, leather, plastics, soap, penicillin and other antibiotics. Much of the work of the atomic energy program is chemical engineering. The types of work done by chemical engineers include: design, construction, research, development, production, financial and patent appraisal, management, and sales.

SOPHOMORE YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Chem. Engin. 25	2	Chem. Engin. 26, Calculations	2
Chem. 29, Qualitative Analy.	4	Chem. 32, Quantitative Analy.	4
Physics 7, General	4	Economics 25, Elements	3
Math. 31, Applied Calculus	4	Math. 32, Diff. Equations	4
English 25, Humane Letters	3	English 26, Humane Letters	3
Military or Air Science 25	1	Military or Air Science 26	1
Physical Education 31, 32	2	Physical Education 33, 34	2

SUMMER WORK (3 Weeks)

Chemical Engineering 75, Instrumentation. Credit, 3.

JUNIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Chemistry 51, Organic	4	Chemistry 52, Organic	4
Chemistry 65, Physical	3	Chemistry 66, Physical	3
Chemistry 67, Physical Chem. Lab.	1	Chemistry 68, Physical Chem. Lab.	1
Civil Engin. 34, Statics	3	Civil Engin. 53, Strength of Mat.	3
Chem. Engin. 55, Unit Opera. I	5	Chem. Engin. 56, Unit Opera. II	5
*Electives	3	*Electives	3

ENGINEERING

SUMMER (3 Weeks)

Chemical Engineering 88, Chemical Engineering Laboratory. Credit, 3.

SENIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Chem. Engin. 81, Heat-Energy Rel.	3	Chem. Engin. 82, Ind. Equil. & Kinetics	3
Chem. Engin. 93, Comprehen. Prob.	3	Chem. Engin. 94, Comprehen. Prob.	3
Chem. Engin. 91, Seminar	1	Chem. Engin. 96, Seminar	1
Elec. Engin. 61, Fundamentals	4	Elec. Engin. 62, Applications	4
Chem. Eng. 89, Lab. Projects	3	*Electives	6
*Electives	5-6		

* Six credits must be taken in the social sciences and 3 in the humanities. The remainder may be in technical or scientific courses or in advanced military.

Civil Engineering

M. P. WHITE, *Adviser*

Civil engineering is concerned with structures, transportation, movement of fluids, use and storage of water, sanitation, and surveying and mapping. A civil engineer may be engaged in research, in planning and designing, in construction, or in maintenance and operation.

The curriculum gives a thorough training in the fundamental physical sciences and at the same time prepares a student for work in any branch of civil engineering, allowing him to specialize to some extent in whatever branch is most interesting to him—sanitation, mechanics and structures, hydraulics, foundation engineering, highway engineering.

SOPHOMORE YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 25, Humane Letters	3	English 26, Humane Letters	3
Math. 31, Integ. Calculus	4	Physics 7, General	4
Econ. 25, Elem.	3	Humanities Elective	3
Civ. Engin. 31, Surveying I	3	Civ. Engin. 32, Surveying II	3
Civ. Engin. 34, Statics	3	Civ. Engin. 52, Dynamics	3
Military or Air Science 25	1	Military or Air Science 26	1
Phys. Ed. 31, 32	2	Phys. Ed. 33, 34	2

SUMMER

Either Civ. Engin. 28 and 30, Surveying Practice, or approved engineering employment.

ENGINEERING

JUNIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
C. E. 53, Strength of Mat. I	3	C. E. 70, Theory of Struct. I	3
C. E. 55, Transport. Engr. I	3	C. E. 77, Sanitary Engr. I	3
C. E. 75, Fluid Mechanics	3	C. E. 80, Soil Mechanics I	3
M. E. 63, Engr. Thermo. I	3	Math. 32, Diff. Equations	4
Geol. 50, Engr. Geol.	3	#English 50, Tech. Writing	2
Soc. Sci. Elective	3	Soc. Sci. Elective	3
C. E. 76, Fluid Mechanics Lab.	1		

SENIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
C. E. 71, Structural Design	3	C. E. 62, Engr. Materials	3
C. E. 78, Sanitary Engr. II	3	C. E. 73, Reinforced Concrete	3
E. E. 61, Fundamentals of E. E.	4	*C. E. 90, Contracts and Spec.	3
**Tech Electives	6	C. E. 96, Professional Sem.	1
Humanities or Soc. Sci. Elect.	3	**Tech Electives	6
		Humanities or Soc. Sci. Elect.	3

May be replaced by M. E. 64.

* May be replaced by E. E. 62.

** Technical electives must be approved by the adviser.

Students taking advanced ROTC or AFROTC courses may substitute these for up to six hours of electives.

Electrical Engineering

G. D. SHECKELS, *Adviser*

Electrical engineering deals with the engineering applications of electricity. Because of its unusual amount of diversity, it is usually convenient to separate it into such main divisions as power, communications, electronics and control, and others.

The undergraduate curriculum is designed to prepare the student for work in any of these fields and to serve as a basis for further specialization. Courses in liberal arts and in engineering courses outside of the department give the student an understanding of the broader aspects of engineering and other fields.

SUMMER (Following Freshman Year)

Mechanical Engineering 23, Shop, 3 credit hours.

SOPHOMORE YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 25, Humane Letters	3	English 26, Humane Letters	3
Math. 31, Integ. Calculus	4	Math. 32, Diff. Equations	4
Physics 7, General	4	C. E. 34, Statics	3
E. E. 41, Circuit Anal. I	4	E. E. 42, Circuit Anal. II	4
Humanities Elective	3	Social Sci. Elect.	3
Military or Air Science 25	1	Military or Air Science 26	1
Physical Ed. 31, 32	2	Physical Ed. 33, 34	2

SUMMER (Following Sophomore Year)

Elec. Engin. 85, Electrical Measurements, 3 credit hours.

ENGINEERING

JUNIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
E. E. 53, Energy Conversion Systems I	4	E. E. 54, Energy Conversion Systems II	4
E. E. 55, Electronics I	4	E. E. 56, Electronics II	4
E. E. 57, Electromagnetic Fields	3	E. E. 58, Elect. Transm. & Transients	3
M. E. 63, Engr. Thermo. I	3	M. E. 64, Engr. Thermo. II	3
C. E. 52, Dynamics	3	C. E. 53, Strength of Materials	3
English 50, Technical Writing	2	Economics 25, Elem.	3

SENIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
E. E. 83, Transient Analysis	4	E. E. 96, Professional Seminar	1
C. E. 75, Fluid Mechanics or M. E. 82, Heat Transfer	3	M. E. 92, Elec. Engr. Mat.	2
Major Tech. Elective	4	Major Tech. Electives	8
Humanities or Social Science Elective	3	Social Science Elective	3
Elective	2 or 3	Elective	3
Elective	3		

All electives to be approved by adviser.

Humanities: art, English, foreign-language literature, music, philosophy.

Social Sciences: economics, history, government, psychology, sociology.

Six credits of advanced military or air science may be substituted for six credits of electives.

Mechanical Engineering

W. H. WEAVER, *Adviser*

Mechanical engineering is that branch of the profession which, broadly speaking, covers the fields of heat, power, design of machinery, industrial management and manufacturing problems.

Building upon a foundation of mathematics, physics, and chemistry, the department of mechanical engineering undertakes to show the student how fundamental physical laws apply to this field and to give him thorough training in the basic principles so that particular applications can be mastered in professional practice. Therefore, no attempt is made to give highly specialized instruction.

SOPHOMORE YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 25, Humane Letters	3	English 26, Humane Letters	3
Math. 31, Integ. Calculus	4	Math. 32, Diff. Equations	4
Civ. Eng. 34, Statics	3	Physics 7, General	4
Mech. Eng. 35, Engin. Mat'l.	4	Mech. Eng. 46, Metallurgy	3
Social Sci. Elect.	3	C. E. 53, Strength of Materials	3
Military or Air Science 25	1	Military or Air Science 26	1
Physical Ed. 31, 32	2	Physical Ed. 33, 34	2

ENGINEERING

SUMMER (Following Sophomore Year)

Mechanical Engineering 29, Metal Machining and Welding, 4 credit hours.

JUNIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Civ. Engin. 52, Dynamics	4	Civ. Engin. 75, Fluid Mech.	3
Mech. Eng. 63, Eng.		Civ. Engin. 76, Fluid Mech. Lab.	1
Thermodynamics I	3	Mech. Eng. 68, Kinematics	3
Elec. E. 61, Fundamentals	4	Mech. Eng. 64, Eng.	
Humanities Elect.	3	Thermodynamics II	3
Civ. Eng. 63, Testing of Mat'ls.	1	Mech. E. 67, Mech. Instr. Lab.	1
Econ. 25, Elem.	3	Elec. Eng. 62, Applications	4
		Engl. 50, Tech. Writ.	2

SENIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Mech. Eng. 87, Engin.		Mech. E. 80, Mech. Eng. Lab.	2
Thermodynamics III	3	Mech. E. 82, Heat Transfer or	
Mech. Eng. 79, Mech. Eng. Lab.	1	Mech. E. 84, Basic Engin.	
Mech. Eng. 83, Machine Design	3	Analysis	3
Mech. Engin. 85, Dynamics		Mech. E. 86, Adv. Machine Des.	3
of Mach.	4	#Technical Elect.	3
Mech. Eng. 95, Sem.	1	Non-Tech. Elect.	6
#Technical Elect.	3		
Soc. Sci. Elect.	3		

Advanced military students will be allowed up to 6 credits substitution according to Department requirements.

Technical electives: Mech. Engin. 74, 75, 76, 77, 82, 84, 90, 94; I. E. 54, 86; C. E. 88.

Humanities elective: art, English, foreign-language literature, music, philosophy.

Social Science electives: history, government, sociology, psychology, economics.

Industrial Engineering Option

W. H. WEAVER, *Adviser*

Industrial engineering is concerned with the engineering aspects of the organization, operation and management of manufacturing plants. Consequently, the industrial engineering curriculum is built on a foundation of mechanical engineering. To the technical knowledge and scientific attitude developed through the study of engineering is added the study of certain courses in the humanities, in economics, and in management.

JUNIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Econ. 25, Elem.	3	Ind. Engin. 53, Work	
Mech. Eng. 63, Engr. Thermo. I	3	Simplification	4
Civ. Eng. 52, Dynamics	3	Mech. Eng. 64, Engr. Thermo. II	3
Elec. Eng. 61, Fundamentals	4	Humanities Elect.	3
Ind. Engin. 51, Ind. Mgt.	3	Elec. Eng. 62, Applications	4
Stat. 77, Elem. Exp.	3	Mech. Eng. 68, Kinematics	3
		Math. 57, Linear Prog.	3

ENGINEERING

SENIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Civ. Eng. 75, Fluid Mech.	3	Ind. Engin. 78, Prod. Control	3
Mech. Engin. 81, Exp. M. E.	2	Ind. Engin. 80, Cost Control Eng.	3
Mech. Engin. 83, Mach. Design	3	Ind. Engin. 54, Eng. Econ.	3
#Ind. Engin. 75, Job Evaluation	2	#Ind. Engin. 96, Sem.	1
Ind. Engin. 77, Factory Planning	2	#Non-Technical Elective	3
Ind. Engin. 79, Prob.	3	Engl. 50, Tech. Writ.	2
#Non-Technical Elective	3	*Soc. Sci. Elect.	3

Advanced military students will be allowed up to six credits substitution according to Department requirements.

* Social Science elective: history, government, sociology, psychology, economics.

Agricultural Engineering

For a description of the major program and the professional opportunities in this field see under College of Agriculture, page 86.

SCHOOL OF HOME ECONOMICS

OREANA MERRIAM, *Acting Dean*

The four-year integrated program in home economics prepares young women for challenging professional careers as dietitians in hospitals, clinics, hotels, in other institutions and as community nutritionists. Various opportunities are open in extension service, in family welfare organizations, in business and industry, where manufacturers and public utilities require the services of qualified home economists. Fashion, textiles, merchandising and retailing, journalism, advertising and television frequently turn to the home economist for their personnel. Home economics education prepares teachers for pre-school, secondary and adult teaching programs.

In addition to preparation for a career in one of these professions, the graduate home economist has developed an appreciation of the knowledge, understandings, attitudes and skills essential to the dual role of modern women in homemaking and community life.

All candidates for a B.S. degree in Home Economics must successfully complete 120 semester hours of academic credit, following one of the suggested curricula, plus the basic physical education courses.

The freshman year is basic for all curricula except the Child Growth and Development program which is given under that heading.

FRESHMAN YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 1, Composition	2	English 2, Composition	2
*Speech 3	2	*Speech 3	2
Chemistry 1, General	3	Chemistry 2, General	3
#Foreign Language or Humanities Elective	3	#Foreign Language or Humanities Elective	3
Home Ec. 3, Nutrition	3	Home Ec. 4, Textiles	3
Physical Education 5, 7	2	Math. 12	3
Arts & Sci. Elective	3	Physical Education 6, 8	2

If a language is elected, the student must complete the intermediate year to meet the basic School requirement.

* May be taken either semester.

SOPHOMORE-JUNIOR-SENIOR CURRICULA

A student may specialize in one of several fields of home economics, choosing, in consultation with her faculty adviser, courses directly related to her objective. For a B.S. degree in Home Eco-

HOME ECONOMICS

nomics, a student must have at least 15 credits in the chosen area during the junior-senior years but not more than 30 credits in one area of subject matter and never more than 42 in the School. The first two years are largely general education and opportunity for electives outside the professional field is provided during the last two years. The following core courses are required of all majors: Home Economics 3, 4, 25 or 31, 75, 77; a choice of the two Foods courses 30 and 51, or the special Foods course 56; and Home Economics 95 or 96 in any one area.

Child Growth and Development

Students interested in child development, nursery school work and social service work may choose this curriculum. The University has arranged for two affiliations for qualified students interested in taking one semester of specialized work elsewhere: with Merrill-Palmer School in Detroit, which specializes in education for home and family life, and with the Eliot Pearson School in Boston which gives professional training for teaching in nursery schools and kindergartens.

FRESHMAN YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 1, Composition	2	English 2, Composition	2
Science	3	Science	3
#Language or Elective	3	#Language or Elective	3
Home Ec. 3, Nutrition	3	Home Ec. 4, Textiles	3
*Speech 3	2	*Speech 3	2
Govt. or History	3	Math. 12, Functional, or equiv.	3
Phys. Ed. 5, 7	2	Phys. Ed. 6, 8	2

SOPHOMORE YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 25, Humane Letters	3	English 26, Humane Letters	3
*Zoology 35, Physiology	3	*Bacteriology 31, Intro.	3
*Psychology 26, General	3	*Sociology 25, Intro.	3
#Language or Elective	3	#Language or Elective	3
*Economics 25, Elements	3	Home Ec. 70, Child Development	3
Phys. Ed. 25, 27	2	Phys. Ed. 26, 28	2

JUNIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
*Psychology 65, Child Psych.	3	Music 85, Music for Elem. Teachers	3
Sociology 57, The Family	3	Home Ec. 56, Meal Planning	3
Home Ec. 75, Econ. of Household	3	*Home Ec. 77, Home Management	3
Home Ec. 85, Nursery Sch. Mgt.	3	*Art or Applied Art	3
Elective	3	Elective	3

HOME ECONOMICS

SENIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Psych. 66, Adolescent, or		Psych. 56, Educational	3
Psych. 61, Social Psych.	3	Home Ec. 98, Special Prob.	3
Home Ec. 73, Child Nutrition	3	Electives or	
Home Ec. 95, Seminar	1	Affiliation with Merrill-Palmer	
Education 51, History	3	School; Eliot-Pearson School	
Anthropology 63, Social Anthr.	3		
Elective	3		

If a language is elected, the student must complete the intermediate year to meet the basic school requirement.

* May be taken either semester.

Foods and Nutrition and Institutional Administration

This curriculum prepares for such professions as therapeutic and administrative dietitian, or nutritionist, and meets the requirements of internships approved by the American Dietetic Association. This basic curriculum is also advised for those interested in home service, food testing, commercial food demonstrating; commercial, industrial and institutional food service.

SOPHOMORE YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 25, Humane Letters	3	English 26, Humane Letters	3
Economics 25, Elements	3	Psychology 26, General	3
Chemistry 33, Organic	4	Bacteriology 31, Intro.	4
Home Ec. 31, Appld. Art, or		Home Ec. 30, Food Sci. & Prep.	3
Home Ec. 25, Cons. Cloth. Prob.	3	Accounting 25, Introduction	3
Zoology 35, Vert. Physiol.	3	Physical Ed. 26, 28	2
Physical Ed. 25, 27	2		

JUNIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Home Ec. 51, Meal Management	3	*Home Ec. 52, Nutri. & Diet.	3
Home Ec. 75, Ec. of Household	3	Home Ec. 77, Home Mgt.	3
Home Ec. 81, Meth. of Teach.	3	Home Ec. 93, Experimental Fds.	3
*Chemistry 79, Biochem.	4	*Marketing 54, Salesmanship	3
*Marketing 53, Markt. Princ.	3	Electives	3-6
Electives	3-6		

SENIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
#Home Ec. 61, Demonst. Tech.	3	Sociology 25, Intro.	3
#Home Ec. 71, Retail Fd. Buy.	3	Home Ec. 96, Sem.	1
*Home Ec. 89, Diet Therapy	3	*Home Ec. 92, Inst. Adm.	4
*Home Ec. 91, Institution Adm.	4	Electives	6-9
Electives	3-9		

Recommended for business and institutional majors.

* Required for A.D.A., elective for others.

Pre-Research in Foods and Nutrition

This curriculum is planned for the students who wish to prepare for graduate work in nutrition or biochemical research. The course should be planned with the advice of the Dean of the School.

SOPHOMORE YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 25, Humane Letters	3	English 26, Humane Letters	3
Economics 25, Elements	3	Psychology 26, General	3
Chemistry 29, Qual. Analy.	4	Chemistry 32, Quant. Analy.	4
Zoology 35, Vert. Physiology	3	Bacteriology 31, Intro.	4
Elective	3	Home Ec. 30, Foods	3
Physical Ed. 25, 27	2	Physical Ed. 26, 28	2

JUNIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Chemistry 51, Organic	4	Chemistry 52, Organic	4
Home Ec. 51, Meal Management	3	Home Ec. 93, Experimental Fds.	3
Home Ec. 75, Ec. of Household	3	Electives	9
Electives	6		

SENIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Chemistry 79, Biochemistry	4	Home Ec. 52, Nutrition	3
Home Ec. 73, Child Nutrition	3	Home Ec. 96, Sem.	1
Electives	9	Home Ec. 98, Special Problems	3
		Food Tech. 92, Object.	
		Analyt. Meth.	3
		Electives	6

Home Economics Education and Extension

Preparation for teaching demands the same basic courses whether a student plans to teach adults or 4-H Club groups in Extension, or young people at the high school or junior high school level. Teachers should be ready to teach some subject other than home economics if demanded; extension workers need special work in rural sociology and adult education. Courses in speech and writing are important. Camp teaching or apprentice training is recommended between junior and senior year.

SOPHOMORE YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 25, Humane Letters	3	English 26, Humane Letters	3
Economics 25, Elements	3	Psychology 26, General	3
Chemistry 33, Organic	4	Zoology 35, Vert. Physiology	3
Home Ec. 31, Applied Art	3	Home Ec. 30, Foods	3
Home Ec. 25, Consumer		Home Ec. 35, Adv. Cloth. Constr.	3
Cloth. Prob.	3	Physical Ed. 26, 28	2
Physical Ed. 25, 27	2		

HOME ECONOMICS

JUNIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Home Ec. 51, Meal Management	3	Home Ec. 77, Home Mgt.	3
Home Ec. 75, Ec. of Household	3	Home Ec. 80, Family Life	3
Home Ec. 81, Methods	3	Ed. 51, Hist. of Ed.	3
Home Ec. 61, Demonstration	3	Soc. 25, Intro.	3
Hist. 25, American Hist.	3	Hist. 26, Amer. Hist.	3

SENIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Psych. 56, Ed. Psych.	3	Home Ec. 62, Home Furnish.	3
Home Ec. 70, Child Development	3	Home Ec. 96, Seminar	1
Home Ec. 87, Tailoring	3	Ed. 85, Prac. Teach.	6
Home Ec. 73, Child Nutri.	3	Ed. 52, Prin. & Meth.	3
*Electives	3		

* Students preparing for Extension Service will be advised regarding choice of electives in line with their interests.

Merchandising

This curriculum provides an opportunity for girls interested in preparing for the merchandising field. The junior and senior curriculum includes courses in home economics and in business administration and should be planned with the faculty adviser by the end of the freshman year if possible. Students choosing this program should plan on at least a year of in-service training after college.

SOPHOMORE YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 25, Humane Letters	3	English 26, Humane Letters	3
Botany 1, Intro. or	3	Psychology 26, General	3
Chemistry 33, Organic	4	Home Ec. 35, Adv. Cloth. Constr.	3
Economics 25, Elements	3	Accounting 25, Introduction	3
Home Ec. 25, Con. Cloth. Prob.	3	Elective	3
Elective	3	Physical Ed. 26, 28	2
Physical Ed. 25, 27	2		

JUNIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Home Ec. 31, Applied Art	3	Home Ec. 62, Home Furnishings	3
Home Ec. 75, Ec. of Household	3	Mktg. 54, Salesmanship & Mgt.	3
Home Ec. 87, Prin. of Tailoring	3	Home Ec. 56, Meal Planning	3
Mktg. 53, Mktg. Prin.	3	Home Ec. 78, Adv. Text. Design or	
Elective	3	Home Ec. 86, Adv. Textiles	
		Elective	3

SENIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Home Ec. 77, Home Mgt.	3	Mktg. 62, Mktg. Research	3
Mktg. 71, Retail		Home Ec. 96, Seminar	1
Merchandising	3	Electives	12
Mktg. 73, Advertising	3		
Home Ec. Elective	3		
Elective	3		

SCHOOL OF NURSING

MARY A. MAHER, *Dean*

The basic nursing program is designed to prepare the qualified high school graduate for a career in professional nursing, as well as for the responsibilities of family and community life.

The program aims to equip the graduate with those understandings and skills which are needed to function effectively in beginning positions in a variety of nursing situations. These include the ability to provide competent nursing care to patients and families in the hospital, home and community; to participate with allied professional and citizen groups for the improvement of total health services to individuals and communities; to participate in organizing, planning and directing the work of nursing auxiliary workers. A foundation is laid for advanced study, through which the nurse may prepare for positions in teaching, supervision, administration, consultation and research.

During the first two years at the University, the student builds an educational foundation upon which to base the more specialized portion of the program. Courses in the humanities and in the sciences—biological, physical and behavioral—are taken with other students on the campus.

The clinical aspects of the program are developed in the next two years, when instruction and correlated clinical practice are given in selected cooperating agencies by the nursing faculty of the University and the allied professional staffs of the cooperating agencies. These agencies include: the Springfield Hospital; the Wesson Maternity Hospital, Springfield; the Visiting Nurse Association of Springfield, the Springfield Health Department; and other community health, educational and welfare resources.

The Bachelor of Science degree, awarded upon successful completion of this program, qualifies the graduate for State Board Examinations in Nursing. If achievement in these examinations is satisfactory, the candidate receives legal status as a registered nurse within the state.

The program is fully accredited by the Accrediting Service of the National League for Nursing.

PROGRAM SEQUENCE

FIRST YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 1, English Comp.	2	English 2, English Comp.	2
History 5, Mod. Europ. Civil.	3	History 6, Mod. Europ. Civil.	3
Sociology 25, Intro. to Soc.	3	Psychology 26, General	3
Chemistry 1, General	3	Chemistry 2, General	3
Mathematics 12, Functional	3	Zoology 1, Introductory	3
Nursing 1, Intro. to Nurs.	1	Nursing 2, Fund. of Nurs. I	1
Physical Education 5, 7	2	Speech 3, Public Speaking	2
		Physical Education 6, 8	2

NURSING

SECOND YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 25, Humane Letters	3	English 26, Humane Letters	3
Anthropology 63, Social Anthro.	3	Psychology 28, General	3
Chemistry 33, Organic	4	Bacteriology 31, Introductory	4
Zoology 37, Human Anat. & Physio.	3	Zoology 38, Human Anat. & Physio.	3
Home Ec. 41, Nutri. & Fd. Prep.	3	Nursing 26, Fund. of Nurs. Care	4
Nursing 25, Fund. of Nurs. II	1	Physical Education 26 & 28	2
Physical Education 25 & 27	2		

THIRD YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Nursing 51, Medical and Surgical Nursing I	17	Nursing 60, Medical and Surgical Nursing II	17
		or	
		Nursing 57, Maternal and Child Nursing	16

SUMMER SESSION

	<i>Credits</i>
1st Term: Liberal Arts Electives	6
2nd Term: Nursing 52, Maternal and Child Nursing I	4

FOURTH YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Nursing 57, Maternal and Child Nursing II	16	Nursing 60, Medical and Surgical Nursing II	17
or		or	
Nursing 54 and 58, Psychiatric Nursing and Public Health Nursing	16	Nursing 54 and 58, Psychiatric Nursing and Public Health Nursing	16
Nursing 95, Senior Nursing Seminar	3	Nursing 65, Principles and Practices of Management in Nursing	3

SCHOOL OF PHYSICAL EDUCATION

W. P. MCGUIRK, *Dean*

The School of Physical Education includes the Departments of Physical Education for Men, Physical Education for Women, Recreational Leadership, and Athletics. It offers a major in Physical Education, and in Recreational Leadership.

PHYSICAL EDUCATION FOR MEN

General Program

Each male freshman and sophomore student, unless exempted under certain conditions, must successfully complete four semesters of physical education and demonstrate his ability to swim as a requirement for his degree. The physical education requirement does not apply to those students excused by the University physician, veterans of military service, and certain transfer students.

Students may receive credit for physical education, during the sport in season, by becoming squad members of any freshman or varsity team. Freshmen who elect an athletic team sport for physical education credit must rejoin their class sections at the termination of the seasonal sport. Students may not participate in a given sport for credit for more than two semesters.

To fulfill requirements, all students must participate in three team sports, four individual activities and aquatics.

Major Program

S. W. KAUFFMAN, *Adviser*

The major program leading to the degree of Bachelor of Science in physical education is designed to train the student for a career as a teacher of physical education. The curriculum combines both general and professional education and provides for full teacher certification for the student who has met the prescribed requirements of preparation. The program also provides for adequate training in a minor area of teaching, elected by the student, including the coaching of inter-school athletics.

PHYSICAL EDUCATION

FRESHMAN YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 1	2	English 2	2
P. E. 23, Principles of Health Ed.	3	Speech 3	2
Mathematics 12 or 1	3	Social Science Elective	3
P. E. 21, Intro. to Phys. Ed.	3	P. E. 22, First Aid and Safety	3
Military or Air Science 1	1	Military or Air Science 2	1
P. E. 5, Skills and Techniques (Lacrosse—Gymnastics)	1	P. E. 6, Skills and Techniques (Gymnastics—Badminton)	1
<i>Elect One</i>		<i>Elect One</i>	
Chemistry 1	3	Chemistry 2	3
Botany 1	3	Botany 1	3
Zoology 1	3	Zoology 1	3
	16		15

SOPHOMORE YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 25	3	English 26	3
Zoology 35, Physiology	3	Bacteriology 31	4
P. E. 41, Anatomy	3	P. E. 42, Kinesiology	3
Psych. 26, Gen. Psychology	3	Psych. 56, Educ. Psychology	3
P. E. 35, Skills and Techniques (Soccer—Wrestling)	1	P. E. 36, Skills and Techniques (Aquatics)	1
Military or Air Science 25	1	Military or Air Science 26	1
Humanities Elective	3	Electives	3
	17		18

JUNIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Rec. Ed. 77 Org. and Adm. of Comm. Recreation	3	Psych. 65, Child Psych.	3
P. E. 53, Phys. Ed. Elem. & Second. Sch.	3	Speech 91, Extempore Speech	3
P. E. 57, Coaching Baseball	1	P. E. 54, Methods of Phys. Ed.	1
P. E. 61, Coaching Basketball	1	P. E. 58, Coaching Track	1
P. E. 59, Adaptive Phys. Ed.	3	P. E. 60, Coaching Football	1
P. E. 63, Skills and Techniques (Baseball—Basketball)	1	P. E. 74, Tests and Msmts. in Phys. Ed.	3
Minor Electives	3-6	P. E. 64, Skills and Tech. (Game—Track)	1
		Minor Electives	3-6
	15-18		
			16-19

SENIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Ed. 52, Prin. and Meth. Teach.	3	P. E. 55, Org. & Adm. of Phys. Ed.	3
Ed. 88, Sec. Sch. Curriculum	3	P. E. 76, Philos. and Prin. Phys. Ed.	3
*Ed. 85, Practice Teaching	6	P. E. 78, Physiology of Exercise	3
P. E. 81, Adm. Intramural Programs	1		

PHYSICAL EDUCATION

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
P. E. 83, Skills and Techniques (Tennis—Archery— Volleyball)	1	Pub. Health 88, Epidemiology P. E. 82, Coaching Soccer P. E. 84, Skills and Tech. (Rhythmics—Golf) Minor Elective	3 1 1 3
	— 14		— 17

* Ed. 85 taken during last 8 weeks of semester. All other courses listed will be accelerated during the first 7 weeks of the semester.

PHYSICAL EDUCATION FOR WOMEN

General Program

Physical Education is required of all women students during their freshman and sophomore years. The courses are planned to provide recreative activity, to improve individual skills, to develop body grace and efficiency and to increase health and vigor.

The first and second year women students are required to take three class hours a week for a total of eight credits, one for each quarter of satisfactory work.

Major Program

RUTH J. TOTMAN, *Adviser*

The major course in physical education is planned to prepare women students for professional careers. Especial attention is given to preparing teachers for elementary and secondary schools in both physical and health education. Other areas for which the graduate will qualify are teaching sports and dance in social agencies, industrial plants, civic centers and camps. A foundation will be laid for specialization in graduate study.

The curriculum gives a broad general background as well as the professional preparation. There is opportunity for individual selection in order to provide a minor.

FRESHMAN YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 1, Composition Speech 3 Hist. 5, Mod. Europ. Civ. W. P. E. 1, Intro. to P. E. Math. 12 or 1 W. P. E. 11, Skills *Elective	2 2 3 2 3 1 3	English 2, Composition Zoology 1, Introductory Hist. 6, Mod. Europ. Civ. W. P. E. 2, Intro. to Chld. thru P. E. W. P. E. 10, Health for Adults W. P. E. 12, Skills *Elective	2 3 3 2 2 2 3

* Chemistry 1 and 2 are required if students have not had chemistry in high school. Others may select from Chemistry, Physics, Bacteriology or foreign language.

PHYSICAL EDUCATION

SOPHOMORE YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 25, Humane Letters	3	English 26, Humane Letters	3
Psych. 26, General Psych.	3	Govt. 25, American Govt.	3
Sociology 25, Intro. to Soc.	3	Zool. 35, Vertebrate Physiol.	3
M. P. E. 41, Anatomy	3	Rec. Lead. 26, Camp Counseling	3
Music 29, Intro. to Music or		M. P. E. 22, First Aid & Safety	3
Art 14, Intro. to Art	3	W. P. E. 30, Aquatics	2
W. P. E. 31, Skills	1	W. P. E. 32, Skills	1

JUNIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Psych. 56, Ed. Psych.	3	W. P. E. 70, Org. & Adm. of P. E.	3
W. P. E. 73, Hist. & Prin. of P. E.	3	M. P. E. 42, Kinesiology	3
W. P. E. 63, Anal. of Rhythm	3	W. P. E. 56, Health Ed. for Elem.	
W. P. E. 53, P. E. in Elcm. Schls.	3	& Sec. Schls.	3
W. P. E. 51, Skills & Teach. Meth.	2	W. P. E. 52, Skills & Teach. Meth.	2
Elective	3	Electives	6

SENIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Ed. 52, Prin. & Meth.	3	M. P. E. 74, Tests & Measurmts.	3
Ed. 88, Secondary Schls.	3	M. P. E. 78, Physiol. of Exercise	3
Ed. 85, Practice Teach.	6	W. P. E. 96, Seminar	3
W. P. E. 83, Adaptive P. E.	3	W. P. E. 62, Skills & Teach. Meth.	2
W. P. E. 61, Skills & Teach. Meth.	2	Electives	6

RECREATION LEADERSHIP

Major Program

W. E. RANDALL, *Adviser*

The department seeks to prepare men and women for positions involving administrative, supervisory and program leadership responsibilities in municipal recreation agencies, voluntary and youth-serving agencies, hospitals, and industrial and institutional organizations.

The program is designed to provide opportunities for a general education, a knowledge and understanding of people and society, activity skills and resource knowledge, professional competency, and practical experience in various leadership situations.

In addition to completing the curriculum as described below, the student is required to:

- 1) attend a professional conference approved by the department;
- 2) participate in programming activities at the Student Union,

PHYSICAL EDUCATION

with a scout troop, or in a similar setting approved by the department;

- 3) devote one summer (minimum of six weeks) to a recreation position, preferably with pay, in a camp, playground, or similar setting approved by the department.

FRESHMAN YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 1, Composition	2	English 2, Composition	2
Speech 3	2	Math. 12, Functional Math.	3
Bot. 1, Intro. Bot.	3	Zool. 1, Intro. Zool.	3
Govt. 25, American Govt.	3	Soc. 25, Intro. to Soc.	3
Hist. 5, Mod. Europ. Civ.	3	M. P. E. 22, First Aid & Safety	3
Rec. Lead. 1, Intro. to Rec. L.	3	Rec. Lead. 2, Social Rec.	2
P. Rec. 13, Skills & Tech.	1	P. Rec. 14, Skills & Tech.	1
Military or Air Science 1 (men)	1	Military or Air Science 2 (men)	1

SOPHOMORE YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
English 25, Humane Letters	3	English 26, Humane Letters	3
Art 14, Intro. to Art or		Zool. 54, Natural Hist.	3
Music 29, Intro. to Music	3	Speech 76, Stage Direction	3
Rec. Lead. 25, Group Leadership	3	Psych. 26, General Psych.	3
Home Ec. 63, Arts & Crafts	3	Rec. Lead. 26, Camp Counseling	3
P. Rec. 39, Skills & Tech.	1	M. P. E. 36, Aquatics or	1
Military or Air Science 25 (men)	1	W. P. E. 30, Aquatics	2
Elective	3	Military or Air Science 26 (men)	1

JUNIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Rec. Lead. 53, Nature Rec.	3	Rec. Lead. 56, Op. of Rec. Facil.	3
Psych. 66, Adoles. or		Psych. 62, Social Psych.	3
Psych. 65, Child Psych.	3	Ed. 66, Audio-visual Aids in Ed.	3
P. Health 61, Gen. & Com. Sanit.	3	P. Rec. 68, Skills & Tech.	1
P. Rec. 67, Skills & Tech.	1	*Soc. 52, Rural Soc. and/or	
*Soc. 51, Urban Soc. and/or		Electives	5-7
Electives	5-7		

SENIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Rec. Lead. 79, Practice Lead.	3	Rec. Lead. 80, Practice Lead.	3
Rec. Lead. 77, Comm. Rec.	3	Rec. Lead. 96, Concepts in Rec.	2
Soc 75, Social Problems	3	Speech 91, Extempore Speech	3
English 51, Advanced Expository		M. P. E. 84, Skills & Tech. or	1
Writing	3	W. P. E.	
Electives	3-6	Electives	6-9

* Select either Sociology 51 or 52.

PHYSICAL EDUCATION

DEPARTMENT OF ATHLETICS

W. P. McGUIRK, *Director*; E. E. LORDEN, *Assistant Director*

The following men coach intercollegiate athletics and intramurals:

R. B. Anderson, assistant coach of football; R. E. Bergquist, freshman coach of baseball; J. S. Bosco, coach of gymnastics; R. Bresciani, assistant director of sports information; L. E. Briggs, coach of soccer; J. L. Cobb, assistant coach of track and director of intramural athletics; R. F. Delaney, assistant coach of football; J. G. Douglas, coach of wrestling; W. Footrick, coach of track and cross country; R. F. Garber, coach of lacrosse and freshman basketball; C. S. Gladchuk, assistant coach of football, coach of golf; R. J. James, freshman coach of gymnastics; V. A. Keedy, athletic trainer; S. R. Kosakowski, coach of hockey and tennis, supervisor of Stockbridge athletics; E. E. Lorden, coach of baseball; R. F. MacPherson, coach of freshman football and wrestling; R. H. Page, business manager of athletics and director of sports information; B. Ricci, coach of freshman lacrosse; J. R. Rogers, Jr., coach of swimming; C. B. Studley, coach of football; M. Zunic, coach of basketball.

DIVISION OF MILITARY AND AIR SCIENCE

The Division of Military and Air Science includes the Department of Military Science and the Department of Air Science. No major is offered in either department. All physically qualified male students, except veterans, who intend to complete the necessary requirements leading to a degree in any four-year course at the University are required to complete the two-year basic course (Army or Air). Male students who are certified by the Director of the University Health Service as being not physically qualified are excused from attendance at military drill but are not excused from attendance at Military and Air Science classes. Conscientious objectors may apply to the President of the University for authorization to be excused from this requirement.

DEPARTMENT OF MILITARY SCIENCE (Armor)

JAMES R. WEAVER, *Colonel, Infantry, Head*

The Army Reserve Officers Training Corps is the means by which young men who have taken the leadership step of coming to the state university may assure themselves that their military service is performed in commissioned status.

The first two years are basic training in leadership and citizenship. The student is informed on the position of the military in the current scene and as it relates to his future.

The second two years of ROTC are not only elective, but selective. The best qualified volunteers are permitted to contract to continue on to a reserve commission. The Army provides these men a subsistence allowance and additional emoluments. There is a six-week training period between the junior and senior year.

Participation in ROTC has notable effect in character development. It also discloses to the army existing officer material and its potential leaders.

DEPARTMENT OF AIR SCIENCE

JOHN C. MARCHANT, *Colonel, USAF, Head*

The mission of the department program is to develop in selected college students, through a permanent program of instruction, those qualities of leadership and other attributes essential to their progressive advancement to positions of increasing responsibility as commissioned officers in the United States Air Force. It is not expected that all so commissioned will select the USAF as a career; nevertheless, the program does offer an excellent means to prepare for such a career.

AIR SCIENCE

The first two years of instruction, the basic course, give a foundation for leadership and air and space age citizenship. The program of the last two years, advanced Air Force ROTC and four weeks of summer training at the end of the junior year, is designed primarily to provide officer training for those selected and qualified for flight training and for technical or administrative assignments.

All students planning to take advanced Air Force ROTC in their junior and senior years should complete Psychology 26 (prerequisite to Psychology 62) prior to entering the second semester of their junior year. The following courses are required for completion of advanced Air Force ROTC:

FRESHMAN YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
One of the following:*		Air Science 2, Foundations of Air Power I	1
English 1 or 2	2		
Mathematics 1	3		
Speech 3	2		
Chemistry 1, 2, 3 or 4	3 or 4		
Air Science 1, Leadership Laboratory	0		

SOPHOMORE YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Air Science 25, Foundations of Air Power II	1	One of the following:*	
		English 25 or 26	3
		Psychology 26	3
		Economics 25	3
		Sociology 25	3
		Air Science 26, Leadership Laboratory	0

JUNIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Speech 91, Public Speaking	3	Psychology 62, Social Psychology II	3
Air Science 51, Staff Organization and Military Management	1	Air Science 52, The Military Justice System	1

SUMMER (4 Weeks)

Summer Training Unit

SENIOR YEAR

<i>1st Semester</i>	<i>Credits</i>	<i>2nd Semester</i>	<i>Credits</i>
Government 53, International Relations	3	Geography 81, World Political Geography	3
Air Science 75, Weather and Navigation	1	Air Science 76, The Air Force Officer	1

* Other substitutions may be authorized by the Department of Air Science.

RELIGION

CHAPLAINS POWER, RUCHAMES, AND SEELY, *Advisers*

Although there is no department of religion at the University of Massachusetts, students interested in pursuing religion as an academic discipline have certain opportunities, both in curricular and co-curricular ways.

In the formal curriculum, courses are offered by several departments in the College of Arts and Sciences. Credit courses in history, such as those covering the ages of medieval civilization and of the Reformation, for example, afford systematic study into the religious institutions and movements of those periods. Similarly, those offered by the philosophy department in the Philosophy of Religion and in Oriental Philosophies provide a critical and constructive study of basic issues, in both the contemporary western world and Asia. Also, certain courses in other departments deal with matters of religion.

In addition to curricular work, students may learn from co-curricular programs of an academic nature offered by the Chaplains and the campus religious organizations. Each year classes (non-credit) are taught by the Chaplains and invited lecturers on topics such as Basic Beliefs and Practices of Judaism, Catholic Faith and Practices, Essentials of Protestant Christianity. Classes in Hebrew and Yiddish, study groups on various problems in campus living, and workshops on personal relations are also open to students.

The B'nai B'rith Hillel Foundation, the Christian Association, and the Newman Club frequently bring to the campus lecturers and scholars of national and international repute to speak at open meetings. Distinguished scientists, journalists, and government officials, as well as theologians and religious leaders, have come as guests of the religious organizations, and some provide leadership for large-scale events such as retreats, the Religious Embassy, and holy day observances. Lectures on religion are occasionally offered in a series of three or more under the leadership of well-known scholars and teachers. The educational and cultural programs of the campus religious organizations are open to all who are interested.

DIRECTORY OF COURSES

AGRICULTURAL AND FOOD ECONOMICS

Head of Department: PROFESSOR JOHN BLACKMORE. PROFESSORS CROSSMON, WESTCOTT; ASSOCIATE PROFESSORS FITZPATRICK, LEED, RUSSELL; ASSISTANT PROFESSORS CALLAHAN, FOSTER, LEE.

AGRICULTURAL ECONOMICS

26. (II) Basic Business Decisions in Agriculture

The application of methods of economic analysis to the production and other decision-making problems of the farm and agricultural firm. 3 class hours Credit, 3. Mr. Foster.

55. (I) Principles of Agricultural Marketing

The economic foundations of marketing; price determination, competitive situations, the role of government in agricultural marketing. 3 class hours. Credit, 3. Mr. Fitzpatrick.

58. (II) Agricultural Policy (1961-62)

Concepts of policy; how farm policy is made; farm policy problems and their economic foundations; consequences for farmers, consumers, and taxpayers. 3 class hours. Credit, 3. Mr. Westcott.

71. (I) Economic History of U. S. Agriculture

The development of agriculture with emphasis on interregional competition, agricultural policy, and the changing position of the farmer in the national economy. 3 class hours. Credit, 3. Mr. Lee.

75. (I) Farm Business Management

Practical application of economics to the decision problems of farm operators; techniques for studying alternative solutions to farm management problems; planning production systems; using business records in farming. 3 class hours. Credit, 3. Mr. Crossmon.

76. (II) Advanced Farm Business Management

Economic analysis of decision problems of case farms. Students make analyses of selected farms. Prerequisite: Ag. Ec. 75. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Crossmon.

78. (II) Land and Water Economics (1960-61)

Economic and institutional factors affecting land and water use; land use planning; future needs and public control of land and water; conservation economics; economics of recreation. Given in alternate years. 3 class hours. Credit, 3. Mr. Foster, Mr. Blackmore.

FOOD ECONOMICS

95. (I) 96. (II) Seminar in Agricultural Economics

For seniors. The study of current developments in agricultural economics; preparation, presentation and discussion of analyses of typical problems. 2 class hours. Credit, 2. Staff.

97. (I) 98. (II) Special Problems in Agricultural Economics

For seniors. The analysis of particular problems in farm management or marketing; provides advanced training in an area of special student interest. 3 class hours. Credit, 3. Staff.

FOOD ECONOMICS

1. (I) The World's Food Supply

Introduction to the world's agriculture and food industries; geography and economics of food production; special problems in U. S. agricultural policy; world food and population problems. 2 class hours. Credit, 2. Mr. Blackmore.

75. (I) Food Marketing

A critical analysis of the food industry; applications of economic analysis to the problems of industry, competition in food marketing, factors affecting costs and pricing. 3 class hours. Credit, 3. Mr. Leed.

78. (II) Food Merchandising

Principles of food merchandising; merchandising trends; selling, advertising, packaging, food store organization; emphasis on merchandising of perishables such as dairy, poultry products, meat, and produce. 3 class hours. Credit, 3. Mr. Leed.

95. (I) 96. (II) Seminar in Food Distribution

Presentation of analyses of topics of interest to students of Food Distribution. 2 class hours. Credit, 2. Staff.

97. (I) 98. (II) Special Problems in Food Distribution

For seniors. Advanced work on problems of special interest; application of principles acquired in other course work to practical problems of food marketing firms. Credit, 3. Staff.

STATISTICS

77. (I) (II) Elementary Experimental Statistics

Covers basic concepts and techniques for determining reliability and significance of small samples. Confidence limits: X^2 , t , and F tests, and simple regression and correlation. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Russell.

79. (I) (II) Elementary Economic Statistics

Covers charting, tables, frequency distribution, central tendency, dispersion, basic concepts of reliability and significance of small samples, index numbers, simple regression and correlation and time series analysis. 3 class hours; optional laboratory and discussion periods. Credit, 3. Mr. Russell.

AGRICULTURAL ENGINEERING

80. (II) Advanced Statistics

Linear and curvilinear multiple correlation analysis. Machine and short-cut graphic methods are used. Some time devoted to probability and analysis of variance. 2 2-hour periods. Credit, 3. Mr. Russell.

AGRICULTURAL ENGINEERING

Head of Department: PROFESSOR R. W. KLEIS. PROFESSOR FITZGERALD; ASSOCIATE PROFESSORS CLAYTON, JOHNSON, NORTON, PERRY, ZAHRADNIK; ASSISTANT PROFESSORS PIRA, WHITNEY; MESSRS. COLLINS, GREINER, JOHNSON.

51. (I) House Planning

Space arrangement, construction materials, construction problems and discussions, utilities, financing, maintenance and remodeling. Particular emphasis on planning and evaluation procedures and factors. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. C. Johnson.

53. (I) Food Service Facilities Planning

Space organization and equipment layouts; discussions and planning relative to facilities, utilities and materials handling. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Perry.

55. (I) Farm Shop

Instruction and practice in use of tools and power equipment; carpentry, welding, sheet metal forming, and concrete work; materials, skills, practices and safety consideration. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Pira.

72. (II) Drainage and Irrigation

The engineering factors of drainage and irrigation; study of various system types and design of systems; problems of flow and run-off. 1 class hour, 1 2-hour laboratory period. Credit, 2. Mr. E. Johnson.

75. (I) Farm Structures and Related Equipment

Fundamental aspects of planning modern farm structures with emphasis on functional design, environmental control and integration of mechanical equipment. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Clayton.

76. (II) Mechanization in Crop Production

Principles of operation, maintenance, and selection of farm tractors and field machinery; also of irrigation and drainage systems and equipment. Emphasis on management practices and discussions. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Whitney.

81. (I) Elements of Food Process Engineering I

Study of fundamental principles involved in the application of unit operations to food processing including selection, management and operation of processing units and instrumentation. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Zahradnik.

82. (II) Elements of Food Process Engineering II

Continuation of Agricultural Engineering 81; a study of the processing of raw materials, including mixing, heating, cooling, evaporating, distilling, dehydration and drying. Prerequisite, Agricultural Engineering 81. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Zahradnik.

AGRONOMY

Head of Department: PROFESSOR WILLIAM G. COLBY, PROFESSOR STECKEL; ASSISTANT PROFESSORS SOUTHWICK, TROLL, VENGRIS, ZAK; MR. MICHELSON.

22. (II) Soils

Fundamentals of soil science covering development, properties and management of soils and the interrelationship of soils to plant growth. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Zak.

51. (I) Field Crops

Production and management of the major field crops of the United States including varieties, varietal improvement, cultural practices, harvesting practices and storage. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Southwick.

52. (II) Forage Crops

An analysis of the basic principles involved in the establishment, fertilization, and management of forage grasses and legumes. 3 class hours. Credit, 3. Mr. Colby.

53. (I) Agrostology (1961-62)

Study of the factors influencing the successful establishment and maintenance of turf grasses used on lawns, sports, highways, airports, and cemeteries. Given in alternate years. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Troll.

56. (II) Agrostology (1961-62)

Business aspects of fine turf management including work schedules, budget planning, labor management and selection of equipment and supplies. Given in alternate years. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Troll.

57. (I) Soil Formation

The development of soils as related to physical, chemical, biological, climatic and geological factors. 3 class hours. Credit, 3. Mr. Southwick.

59. (I) Soil-Plant Mineral Nutrition

Mineral nutrients in the growth of crop plants; the use of fertilizers and other soil amendments; soil reaction; mineral deficiencies and toxicities in plants. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Zak.

65. (I) Weed Control

Weed infestation, common weeds, identification and principles of control. Special emphasis on the chemical control of weeds. Prerequisites, Chemistry 1, 2 and Botany 1. 3 class hours. Credit, 3. Mr. Vengris.

ART

79. (I) Soil Physics

The behavior of the soil mass related to particle size and distribution; colloids; water-liquid and vapor transfer; gas diffusion; heat-sources, capacity, and conductance. 1 class hour, 2 2-hour laboratory periods. Credit, 3.

84. (II) Soil Chemistry (1961-62)

The inorganic and organic chemical reactions related to nutrient supply in soils and soil nutrition of plants. Colloidal aspects of soil chemical reactions and soil-plant interrelationships. Prerequisites, Chemistry 29, Botany 68, Agronomy 57. 3 class hours. Credit, 3. Mr. Steckel.

84B. (II) Soil Chemistry Laboratory (1961-62)

Methods and techniques used in soil chemistry research and in plant science investigations. Cation exchange capacity, exchangeable cations, and soil phosphate by flame photometry and spectrophotometry. Prerequisites, Chemistry 29, 30, Botany 68, Agronomy 57. 2 3-hour laboratory periods. Credit, 2. Mr. Steckel.

97. (I) 98. (II) Special Problems in Agronomy

For seniors specializing in agronomy. Designed to acquaint students with agronomic research methods and procedures. 3 2-hour laboratory periods. Credit, 3. Staff.

ART

Head of Department: PROFESSOR PAUL F. NORTON. ASSISTANT PROFESSOR MATHESON; MISS DAMM, MESSRS. MACIVER, TOWNSEND.

14. (I) and (II) Introduction to Art

An introduction to great works of art studied in historical sequence, including techniques and aesthetic principles. 3 class hours. Credit, 3.

31. (I) and (II) Basic Design

Introduction to the elements and principles of design and their imaginative application to visual presentation. 6 studio hours. Credit, 3.

32. (I) and (II) Basic Design

Continuation of Art 31. With more attention given to three-dimensional design. Prerequisite, Art 31. 6 studio hours. Credit, 3.

33. (I) and (II) Basic Drawing

Introduction to drawing in black and white, applying pencil, crayon, charcoal techniques to representation in line and tone, emphasizing sound observation and effective presentation. 6 studio hours. Credit, 3.

34. (I) and (II) Advanced Drawing

Continuation of Art 33. Investigation of creative possibilities of pen and ink, brush and other black and white techniques. Prerequisite, Art 33. 6 studio hours. Credit, 3.

51. (I) and (II) Water Color

Initial concentration on transparent water color, emphasizing control of techniques and mastery of color relationships. Further experience with opaque water color, such as gouache, casein. Prerequisites, Art 31, 33. 6 studio hours. Credit, 3.

52. (I) and (II) Water Color

Continuation of Art 51, Prerequisite, Art 51. 6 studio hours. Credit, 3.

53. (I) and (II) Oil Painting

Easel painting in oil and related media, based on elementary understanding of physical properties of medium, and encouraging individual directions within limitations of sound composition. Prerequisites, Art 31, 33. 6 studio hours. Credit, 3.

54. (I) and (II) Oil Painting

Continuation of Art 53. Prerequisite, Art 53. 6 studio hours. Credit, 3.

57. (I) and (II) Printmaking

Basic study of materials, techniques, aesthetic considerations peculiar to graphic media of lithography and intaglio (etching, aquatint, etc.), permitting students to print their own work. Prerequisites, Art 31, 34 or permission of instructor. 6 studio hours. Credit, 3.

58. (I) and (II) Printmaking

Continuation of Art 57. Prerequisite, Art 57. 6 studio hours. Credit, 3.

60. (I) and (II) Sculpture

Experimentation with materials. Investigation into the nature of 3-dimensional form. The development of 3-dimensional order. Individual projects. Prerequisites, Art 31, 33. 6 studio hours. Credit, 3.

61. (I) and (II) Sculpture

Continuation of Art 60. Prerequisite, Art 60. 6 studio hours. Credit, 3.

65. (I) Ceramics

The designing and making pottery with the potter's wheel and related tools. A student should have taken one or more basic courses in creative art before this course. 3 class hours. Credit, 3.

71. (I) Ancient Art & Archaeology

The art of early cultures, mainly in the European region, including Greek and Roman sculpture and painting. Students are encouraged to take Art 14 before this course. 3 class hours. Credit, 3.

73. (I) Mediaeval Art

Earliest phases of Christian art in catacombs, barbaric influences of northern Europe, Byzantine developments in the East, and the Romanesque and Gothic in the West. Students are encouraged to take Art 14 before this course. 3 class hours. Credit, 3.

ASTRONOMY

75. (II) Renaissance Art

Painting, sculpture, architecture, with particular attention given to Italian Art. Emphasizes social and historical importance of arts, and changes in style and aesthetic theory. 3 class hours. Credit, 3.

76. (II) Baroque Art

The Art of the 17th and early 18th centuries in Italy, Spain, Germany, France and the Low Countries. It is advisable for students to take Art 14 before this course. 3 class hours. Credit, 3.

77. (I) American Art

Study of earliest Colonial art and architecture, the impact of later European influences; regional art of the late 19th and 20th centuries, and contemporary phases of abstract art. 3 class hours. Credit, 3.

79. (II) Modern Painting and Sculpture

Origin of modern movements in art, and an analysis of contemporary techniques and styles as they relate to society. 3 class hours. Credit, 3.

81. (I) Modern Architecture

History of the changes in style, technical advances, and aesthetic principles during the past two hundred years. 3 class hours. Credit, 3.

ASTRONOMY

Astronomy is a Joint Department of the four colleges: Amherst, Mount Holyoke, Smith, and the University. ASTFC means "Astronomy Four-Colleges."

Head of Department: ASSOCIATE PROFESSOR ALBERT P. LINNELL. ASSOCIATE PROFESSOR YOSS; ASSISTANT PROFESSORS HOWARD, KOCH, OLSON.

1. (I) Elementary Astronomy (ASTFC 1)

The solar system, systems of coordinates, laws of motion, planets and satellites, the sun. Supplemented by occasional hours of evening observation. Prerequisite, high school trigonometry. 3 class hours. Credit, 3.

2. (II) Elementary Astronomy (ASTFC 1)

The astronomical universe. Stellar distances and motions, star clusters and nebulae. Supplemented by occasional hours of evening observation. Prerequisite, Astronomy 1. 3 class hours. Credit, 3.

24. (II) Development of Astronomy (ASTFC 24)

The progress of astronomy through the work of great men. The development of important ideas in the field from ancient to modern times. Prerequisite, Astronomy 2. 3 class hours. Credit, 3.

51. (I) Statistical Astronomy (ASTFC 31)

Stellar motions as derived from trigonometric, spectroscopic, and statistical parallaxes, proper motions, and radial velocities. Stellar luminosity functions, and related topics. Prerequisites, Astronomy 2; Physics 7 or 26; Mathematics 29 previously or concurrently. 3 class hours. Credit, 3.

52. (II) Galactic Structure (ASTFC 32)

Properties of the galactic system revealed by star clusters, the general distribution of stellar types, and the interstellar medium. Kinematics and dynamics of galactic motion. Recent results from the field of radio astronomy. Prerequisites, Astronomy 2; Physics 7 or 26; Mathematics 30 previously or concurrently. 3 class hours. Credit, 3.

65. (I) Celestial Mechanics (ASTFC 33)

Development of the two body problem and the restricted three body problem as applied to the solar system and stellar systems. Prerequisites, Astronomy 2; Mathematics 30; Physics 7 or 26. 3 class hours. Credit, 3.

66. (II) Double Stars

Analysis of the orbits of double stars and discussion of their physical characteristics. Prerequisites, Astronomy 2; Mathematics 30; Physics 7 or 26. 3 class hours. Credit, 3.

75. (I) Astrophysics (ASTFC 41)

Introduction to the theory of atomic spectra as applied to the analysis of stellar atmospheres. Transfer of radiation, determination of temperatures, pressures, and abundances. Prerequisites, Physics 7 or 26; Mathematics 30. 3 class hours. Credit, 3.

76. (II) Astrophysics (ASTFC 42)

Gas laws and nuclear reactions as applied to the structure of stellar interiors. Evolution of stars. Prerequisites, Physics 7 or 26; Mathematics 30. 3 class hours. Credit, 3.

81. (I) Laboratory Astronomy (ASTFC 39)

Study and development of observing procedures. Analysis of astronomical observations. Prerequisites, Astronomy 2; Physics 7 or 26; Mathematics 30. 1 hour lecture, 4 hours laboratory. Credit, 3.

95. (I) 96. (II) Seminar

An individual research project approved by the department. Prerequisite, Consent of the department. Credit, 3.

BACTERIOLOGY AND PUBLIC HEALTH

Head of Department: PROFESSOR RALPH L. FRANCE. ASSOCIATE PROFESSORS GARVEY, PERRIELLO; ASSISTANT PROFESSORS CZARNECKI, LARKIN, MANDEL; MR. WISNIESKI, MR. ERNEST A. SNOW of the Division of Sanitary Engineering of the Massachusetts Department of Public Health.

31. (I) and (II) Introductory Bacteriology

An introduction to the bacteria and sub-microscopic organisms, their place in the general field of biology, and their importance in world industry, economics and health. 2 class hours, 2 2-hour laboratory periods. Credit, 4. Mr. Czarnecki, Mr. Larkin.

BACTERIOLOGY

51. (I) 52. (II) Advanced Bacteriology

The identification and differentiation of bacterial species by morphological, cultural, physiological and serological studies. Influence of physical and chemical factors on growth and viability. Prerequisite, for 51, Bacteriology 31; for 52, Bacteriology 51. 2 class hours, 2 2-hour laboratory periods. Credit, 3. Miss Garvey.

54. (II) Water and Sewage Bacteriology

For students majoring in Engineering. A study of the organisms concerned in water purification and sewage treatment. Prerequisite, Civil Engineering 77 or permission of instructor. 2 3-hour laboratory periods. Credit, 3. Mr. Perriello.

55. (I) Fundamentals of Soil Microbiology

A study of the organisms contained in soils and their effect on soil fertility. 2 3-hour laboratory periods. Credit, 3. Mr. Mandel.

56. (I) Methods for Bacteriological Preparations

Methods of preparation and sterilization of culture media and equipment, and the use, care and repair of laboratory instruments. 2 2-hour laboratory periods. Credit, 2. Mr. Mandel.

81. (I) General Applied Bacteriology

Laboratory procedures used in present day applied bacteriology. Subjects studied include: soils, dairy products, water and shellfish and air analysis. Prerequisite, Bacteriology 51 or permission of the instructor. 2 class hours, 2 2-hour laboratory periods. Credit, 3. Mr. Perriello.

82. (II) Quantitative and Qualitative Bacteriology

Bacteriological principles which apply to the preservation, fermentation and spoilage of foods; the sanitary examination of foods; the causes of food poisoning; microbiological assays. Prerequisite, Bacteriology 51 or permission of the instructor. 2 class hours, 2 2-hour laboratory periods. Credit, 3. Miss Garvey.

85. (I) Bacteriology (Immunology)

Consideration of host reactions in prevention and cure of disease; use of biological products in differential bacteriology, disease diagnosis and determination of blood groups. Prerequisite, Bacteriology 52 or permission of instructor. 1 class hour, 1 4-hour laboratory period. Credit, 3. Miss Garvey.

86. (II) Virology

The nature and properties of the animal, plant and bacterial viruses. Prerequisite, permission of instructor. 2 class hours. 1 2-hour laboratory period. Credit, 3.

90. (II) Sanitary Bacteriology

Public health laboratory procedures including field collection of samples. Prerequisite, Bacteriology 81. 1 4-hour and 1 2-hour laboratory period. Credit, 3. Mr. Perriello.

PUBLIC HEALTH

92. (II) Clinical Microbiology

A study of procedures used in clinical laboratory work. Prerequisites, Bacteriology 85; Zoology 35, 69. 1 class hour, 1 3-hour and 1 2-hour laboratory period. Credit, 3. Mr. France.

93. (I) Studies of Special Microbial Groups

The biology of autotrophic bacteria, photosynthetic bacteria, actinomycetes, myxobacteria, chlamydobacteria and spirochaetes. Prerequisite, Bacteriology 51. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Mandel.

94. (II) Bacterial Physiology

Growth and activities of microorganisms in respect to environment and genotype. Kinetics of population growth, enzymatic constitution, intermediary metabolism, and effects of radiation. Prerequisites, Bacteriology 31; Chemistry 79 or equivalent, and permission of the instructor. 2 class hours, 1 4-hour laboratory period. Credit, 3. Mr. Mandel.

97. (I) 98. (II) Problems

Qualified seniors who have obtained permission from the department may arrange for independent work on special problems in bacteriology. Credit, 3.

PUBLIC HEALTH

61. (I) 62. (II) General and Community Sanitation

The influence of health measures on community welfare with emphasis on all phases of environmental health. 3 class hours. Credit, 3. Mr. Wisnieski.

63. (I) Industrial Hygiene and Sanitation

The practices and principles of industrial processes involved in industrial health and sanitation. 3 class hours. Credit, 3. Mr. Perriello.

64. (II) Microscopy of Water

Microscopic forms of life exclusive of the bacteria. Counting and control of plankton in potable waters. Elements of limnology. Prerequisite, Bacteriology 31. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Snow.

84. (II) Public Health Administration

The organization, function, and administration of governmental health agencies; including public health laws, regulations, and sanitary codes, their origin and enforcement. 3 class hours. Credit, 3. Mr. Perriello.

86. (II) Field Studies in Sanitation

Evaluation of environmental health practices using graphical summaries and biostatistical methods. Prerequisites, Public Health 61 and 62. 1 class hour, 1 4-hour laboratory period. Credit, 2. Mr. Wisnieski.

88. (II) Epidemiology and Communicable Disease Control

The general principles of the spread of infections, supported through the study of the communicable diseases, grouped according to their modes of transmission. Admission by permission of instructor. 3 class hours. Credit, 3. Mr. Wisnieski.

BOTANY

92. (Summer) Supervised Field Training

A thirteen-week field training program with an official agency under the supervision of the Staff. This is a prerequisite for professional placement. 13 weeks. Credit, 6.

BOTANY

Head of Department: PROFESSOR D. S. VAN FLEET. PROFESSORS LIVINGSTON, SCHUSTER; ASSOCIATE PROFESSOR GENTILE; ASSISTANT PROFESSORS BIGELOW, DAVIS, PUTALA, ROWLEY, WILCE; MRS. BIGELOW, MR. BRYANT.

1. (I) and (II) Introductory Botany

Structure, function and reproduction of plants, dealing primarily with the flowering plants. Basic biological principles are emphasized. 2 class hours, 1 3-hour laboratory period. Credit, 3. The Staff.

25. (I) The Plant Kingdom

A general survey of the morphology, reproduction, distribution and importance of the slime molds, bacteria, algae, fungi, lichens, liverworts, mosses, ferns and seed plants. Prerequisite, Botany 1. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Davis.

26. (II) New England Flora

Identification of tracheate plants (lycophods, horsetails, ferns, gymnosperms, angiosperms) and the families they represent. Prerequisite, Botany 1, Botany 25 recommended. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Rowley.

57. (I) Plant Anatomy and Histological Methods

Study of origin and structure of vegetative and reproductive organs of seed plants coordinated with exercises in preparation of stained slides for microscopic studies. 2 class hours, 2 2-hour laboratory periods. Credit, 4. Mr. Putala.

59. (I) The Angiosperms

The evolution and systematics of flowering plants, emphasizing families and their relationships. Prerequisite, Botany 1. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Schuster.

60. (II) Morphogenesis

The development of plant form and structure at the level of cells and organs. Illustrations drawn from controlled experiments on the contribution of internal and external factors. Prerequisite, Botany 1. 2 class hours, 1 2-hour laboratory-discussion period. Credit, 3. Mr. Davis.

61. (I) Phycology

The phylogeny, taxonomy, morphology and ecology of the major groups of the marine and fresh water algae. Field work in marine and fresh water environments. Prerequisite, Botany 25. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Wilce.

62. (II) The Archegoniates

The morphology, evolution and systematics of bryophytes, ferns and their allies. Prerequisite, Botany, 25. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Schuster.

66. (II) General Mycology

Survey of the various fungi, their life history and distribution, their significance in disease, their utilization by man. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Bigelow.

67. (I) Introductory Plant Physiology

Plant processes and their relation to the complex of activity constituting plant growth. Topics include water relations, photosynthesis, fat and protein synthesis, digestion, translocation and respiration. Prerequisites, Botany 1, Chemistry 1 and 2. Recommended, Chemistry 33 or equivalent. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Gentile.

68. (II) Plant Metabolism (1961-62)

A study of the chemical operation of plants, emphasizing the enzymatic processes involved in the synthesis and breakdown of the more important chemical constituents of plants. Offered in alternate years. Prerequisites, Botany 67, Chemistry 33 or equivalent. 2 class hours, 1 4-hour laboratory period. Credit, 4. Mr. Gentile.

78. (II) Plant Growth (1960-61)

Internal and environmental factors influencing plant growth with emphasis on the role of hormonal regulation and enzyme localization in relation to growth and development. Prerequisite, Botany 67. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Gentile, Mr. Van Fleet.

81. (I) Plant Ecology

Interrelationships between plants and their environment, with special emphasis on the structure and development of plant communities. Prerequisite, Botany 1; Botany 26 and 67 recommended. 2 3-hour class-laboratory periods. Credit, 3. Mr. Livingston.

82. (II) Plant Geography

Principles governing the development and natural distribution of plants and plant communities with special consideration of the vegetation of North America. Prerequisite, Botany 18. 3 class hours. Credit, 3. Mr. Livingston.

89. (I) Developmental Plant Cytology

Emphasis on development of plant cell walls, plastids and mitochondria; introduction to fine structure of cytoplasmic and nuclear components and ontogenetic and phylogenetic development of plant cell structures. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Rowley.

97. (I) 98. (II) Special Problems

Supervised problem work for qualified students. Hours by arrangement. Credit, 1-3. The Staff.

BUSINESS ADMINISTRATION

BUSINESS ADMINISTRATION

ACCOUNTING

Chairman of Department: ASSOCIATE PROFESSOR JOHN W. ANDERSON. ASSOCIATE PROFESSORS LENTILHON, SINGER; ASSISTANT PROFESSOR KRZYSTOFIK; MESSRS. FITZGERALD, STANHOPE.

25. (I) and (II) Introduction to Accounting I

An introduction to the principles underlying the collection, recording, and interpretation of accounting data. 3 class hours. Credit, 3. Staff.

26. (I) and (II) Introduction to Accounting II

A continuation of Accounting 25 with major emphasis on accounting for corporations, partnerships and manufacturers. Prerequisite, Accounting 25. 3 class hours. Credit, 3. Staff.

27. (I) Introduction to Accounting

A one semester course to combine the coverage of Accounting 25 and 26. 5 class hours. Credit, 3. Mr. Singer.

61. (I) Intermediate Accounting

Current theoretical bases and practical procedures for valuation of assets and liabilities, a measurement of net income and presentation of this financial information. Prerequisite, Accounting 26 or 27. 4 class hours. Credit, 4. Mr. Fitzgerald.

62. (II) Advanced Accounting

A continuation of Accounting 61 with principal emphasis on the funds statement, accounting for partnerships and an introduction to consolidated financial statements. Prerequisite, Accounting 61. 4 class hours. Credit, 4. Mr. Singer.

63. (I) and (II) Cost Accounting

Basic principles of cost accounting with emphasis on the determination and control of unit costs for materials, labor and overhead under the Job Order and Process costs systems. Prerequisite, Accounting 26 or 27. 3 class hours. Credit, 3. Mr. Krzystofik, Mr. Lentilhon.

64. (II) Advanced Cost Accounting

A continuation of the theory and practice of cost accounting with emphasis on standard, estimated and distribution costs. Prerequisite, Accounting 63. 3 class hours. Credit, 3. Mr. Lentilhon.

72. (II) Administrative Accounting and Control

A case-study approach to the significance of quantitative data for decision making. 3 class hours. Credit, 3. Mr. Singer.

73. (I) and (II) Federal Income Tax Procedure

A study of federal income tax laws and regulations as they affect individuals; the preparation of tax returns. Prerequisite, Accounting 25 or 27. 3 class hours. Credit, 3. Staff.

BUSINESS AND FINANCE

74. (II) C.P.A. Problems

Extensive practice in solution of problems from C.P.A. examinations. Topics covered include governmental and institutional accounting, estates, trusts, receiverships, liquidations and consolidations. Prerequisite, Accounting 62. 3 class hours. Credit, 3. Mr. Anderson.

77. (I) Auditing

A course in the verification of accounting records dealing with audit theory and procedure. Prerequisites, Accounting 62 and 63. 3 class hours. Credit, 3. Mr. Krzystofik.

78. (II) Advanced Federal Tax Procedures

A continuation of Accounting 73 emphasizing corporations, partnerships, estates and trusts, gifts and estate taxes. Prerequisite, Accounting 73. 3 class hours. Credit, 3. Mr. Anderson.

90. (II) Theory of Accounts

The study of literature dealing with agreed and controversial criteria for collecting and reporting financial information. Prerequisite, Permission of the instructor. 3 class hours. Credit, 3. Mr. Singer.

97. (I) 98. (II) Independent Study and Research

For qualified seniors, independent study and research on selected problems in Business Administration. With permission of the Chairman of the Department. Credit, 1-3. Staff.

GENERAL BUSINESS AND FINANCE

Chairman of Department: PROFESSOR JAMES B. LUDTKE. ASSOCIATE PROFESSORS CHENG, KYLER, RIVERS, SMART; ASSISTANT PROFESSOR BURAK.

GENERAL BUSINESS

65. (I) Principles of Transportation

The development and growth of transportation as a function of production and distribution of goods; rate structures and transportation laws as they affect the relationships between carriers and shippers. 3 class hours. Credit, 3. Mr. Rivers.

66. (II) Traffic Management

The relationships and responsibilities among carriers, regulatory authorities and users of transportation services. Prerequisite, Gen. Bus. 65 and consent of instructor. 3 class hours. Credit, 3. Mr. Rivers.

67. (I) Public Utilities

The nature, organization and administration of regulated industries; aspects of public regulation at Federal, State and Local levels as they affect service operations. 3 class hours. Credit, 3. Mr. Rivers.

68. (II) Real Estate

A comprehensive survey of real estate principles and practices; the mechanics of the real estate market and the economic and legal factors that influence it. 3 class hours. Credit, 3. Mr. Burak.

FINANCE

71. (I) and (II) Business Law I

The law of contract and sales. 3 class hours. Credit, 3. Mr. Burak, Mr. Smart.

72. (II) Business Law II

The law of agency and negotiable instrument and time permitting, bankruptcy and wills. The students may register for either General Business 72 or 73. Prerequisite, Gen. Bus. 71. 3 class hours. Credit, 3. Mr. Smart.

73. (I) Business Law III

The law of partnerships, corporations and property. Prerequisite, Gen. Bus. 71. 3 class hours. Credit, 3. Mr. Smart, Mr. Burak.

78. (II) Administrative Statistics

Probability and statistical distributions applied to business management problems. Application of Bayes' theorem to sampling for business decision-making under certainty. Business forecasting and time series analysis. 3 class hours. Credit, 3. Mr. Cheng.

97. (I) 98. (II) Independent Study and Research

For qualified seniors, independent study and research on selected problems in Business Administration. With permission of the Chairman of the Department. Credit, 1-3. Staff.

FINANCE

55. (I) and (II) Financial Institutions

Our country's financial system and the functional relationships between financial institutions and the economic activities of households, business firms and governmental units. Prerequisites, Economics 25 and Accounting 25 or consent of Instructor. 3 class hours. Credit, 3. Staff.

65. (I) and (II) Corporation Finance

Social significance of corporate financial behavior, internal administration and control, expansion, capital-re-adjustment, and social control. Prerequisite, Accounting 25 or consent of instructor. 3 class hours. Credit, 3. Mr. Burak, Mr. Cheng, Mr. Rivers.

75. (I) Principles of Insurance

Risks encountered by individuals and business firms and the methods and institutions which have been established to insure against financial losses. The various forms of insurance are studied primarily from the buyers' point of view. 3 class hours. Credit, 3. Mr. Kyler.

76. (II) Life Insurance

The application of life insurance to the problems of family security, business security, investments, and estate protection. 3 class hours. Credit, 3. Mr. Kyler.

81. (I) Problems of Business Finance I

Short and intermediate-term financing; decision-making under uncertainty regarding needs and sources of funds. Prerequisite, Finance 65. 3 class hours. Credit, 3. Mr. Cheng.

MANAGEMENT

82. (II) Problems in Business Finance II

Long term financing, capital budgeting, reserves and dividend policy, pensions, company expansion, merger and consolidation, reorganization. Prerequisite, Finance 65. 3 class hours. Credit, 3. Mr. Cheng.

83. (I) Investments

The development of a general theory of investment management and its application to individual and institutional investors. Prerequisites, Finance 35 and Finance 65 or consent of instructor. 3 class hours. Credit, 3. Mr. Ludtke.

84. (II) Security Analysis

Examination of factors affecting investment values of securities and the methods used in their analysis. Prerequisite, Finance 83. 3 class hours. Credit, 3, Mr. Ludtke.

MANAGEMENT

Chairman of Department: ASSISTANT PROFESSOR CONLON, PROFESSOR O'DONNELL;
ASSOCIATE PROFESSOR HACKAMACK; MR. ELKINS.

61. (I) and (II) Principles of Management

The basic course dealing with the fundamental principles and practices of the managerial process in business enterprises. 3 class hours. Credit, 3. Mr. Elkins, Mr. Hackamack.

64. (I) and (II) Personnel Management

The principles and policies followed by management in the procurement, development, direction and control of personnel. 3 class hours. Credit, 3. Mr. Conlon, Mr. O'Donnell.

67. (I) Management-Union Relations I

A comparison of union-management objectives, functions and structures, including the scope and impact of union penetration into areas of managerial authority. Prerequisites, Management 61, 64, or Economics 79. 3 class hours. Credit, 3. Mr. Conlon.

68. (II) Management-Union Relations II

The problems involved in the interpretation and administration of collective bargaining agreements are studied by use of the case method of analysis. Prerequisite, Management 67 or consent of instructor. 3 class hours. Credit, 3. Mr. Conlon.

81. (I) Theory of Business Administration

The philosophy and theoretical context of administration, corporate objectives, standards, ethics, plans, policies, responsibility, authority, line-staff relations communications and morale. Prerequisite, Management 61. 3 class hours. Credit, 3. Mr. Elkins, Mr. O'Donnell.

85. (I) Management of Production

The scientific methods and principles of coordinating a series of productive functions according to a plan which will economically utilize corporate facilities and regulate the orderly movement of goods through the entire manufacturing cycle. Prerequisite, Management 61. 3 class hours. Credit, 3. Mr. Hackamack.

MARKETING

86. (II) Management of Production II

Through specific cases and supporting investigation, consideration is given to the analysis of problems in production management at the corporate level. Prerequisite, Management 85. 3 class hours. Credit, 3. Mr. Hackmack.

92. (II) Problems of Management

An integrating course dealing with the problems of management embracing the organic and management functions, using cases for analysis and systematic decision-making practice. Prerequisites, Management 61, 81, 85. 3 class hours. Credit, 3. Mr. Elkins, Mr. O'Donnell.

97. (I) 98. (II) Independent Study and Research

For qualified seniors, independent study and research on selected problems in Business Administration. With permission of the Chairman of the Department. Credit, 1-3. Staff.

MARKETING

Chairman of Department: PROFESSOR HAROLD E. HARDY. ASSISTANT PROFESSORS
DREW-BEAR, ZANE.

53. (I) Marketing Principles

The problems involved in the distribution of industrial and consumer goods including wholesaling, retailing and sales promotional activities. 3 class hours. Credit, 3. Staff.

54. (II) Salesmanship and Sales Management

The principles and practices of selling; the management of sales personnel and the control of sales operations. 3 class hours. Credit, 3. Mr. Hardy.

62. (II) Marketing Research

The aims, sources and fact-gathering methods of marketing research activities. Individual case study and research projects. 3 class hours. Credit, 3. Mr. Drew-Bear.

71. (I) Retail Merchandising

The principles of retailing with case studies of retail management problems. 3 class hours. Credit, 3. Mr. Drew-Bear.

73. (I) Advertising

The techniques and media of advertising, its services to business and the organization and economic functions of the advertising industry. 3 class hours. Credit, 3. Mr. Hardy.

74. (II) New England Markets

Individual and group study of the marketing problems of New England industrial enterprises. 3 class hours. Credit, 3.

75. (I) Credits and Collections

The principles and practices of mercantile and retail credit management including the sources and analysis of credit information, collections procedures and control and the rights of creditors. 3 class hours. Credit, 3. Staff.

CHEMISTRY

76. (II) Purchasing

The purchasing organization and practices of industrial enterprises. 3 class hours. Credit, 3. Mr. Zane.

79. (I) Wholesaling

The field of wholesaling, types and classes of organizations and centers, the organization and management of wholesale establishments including purchasing and selling activities. Prerequisite, Marketing 53. 3 class hours. Credit, 3. Mr. Zane.

80. (II) Problems in Marketing

The interrelations between research planning and the execution of sales programs with case studies showing the effects of various marketing policies upon individual firms. Prerequisite, Marketing 53. 3 class hours. Credit, 3. Mr. Drew-Bear.

84. (II) Problems in Advertising

Application of basic marketing knowledge in planning and analyzing advertising campaigns, research appropriations, the determination of the advertising budget and the choice of media and the subsequent measurement of effectiveness. Prerequisites, Marketing 53 and 73. 3 class hours. Credit, 3. Mr. Hardy.

97. (I) 98. (II) Independent Study and Research

For qualified seniors, independent study and research on selected problems in Business Administration. With permission of the Chairman of the Department. Credit, 1-3. Staff.

CHEMISTRY

Acting Head of Department: ASSOCIATE PROFESSOR GEORGE R. RICHASON. PROFESSORS CANNON, LITTLE, SMITH, STEIN; ASSOCIATE PROFESSOR ROBERTS; ASSISTANT PROFESSORS CARPINO, CHANDLER, McWHORTER, OBERLANDER, PROCTOR, STIDHAM, ZAJICEK; MRS. BULLIS, MRS. FESSENDEN, MISS KENDROW, MESSRS. ROWELL, STENGLE, WILLIAMS, AND WYNNE.

1. (I) 2. (II) General Chemistry

A study of the fundamental chemical laws and theories, with the object of giving the student a sound scientific training through a course in chemistry. 2 class hours; 1 quiz hour; 1 2-hour laboratory period. Credit, 3. Mr. Richason and Staff.

3. (I) 4. (II) General Inorganic Chemistry

For students planning to major in chemistry and others for whom the course is a departmental requirement. Study of fundamental chemical laws and theories. 2 class hours; 1 quiz hour; 2 2-hour laboratory periods. Credit, 4. Mr. Richason and Staff.

25. (I) 26. (II) Principles of Chemistry

For students who qualify by examination. A study of fundamental laws and theories including the theory and practice of qualitative and quantitative methods of analysis. 2 class hours, 6 laboratory hours. Credit, 4. Mr. Smith, Mr. Richason, Mr. Zajicek.

CHEMISTRY

27. (I) Analytical Chemistry

A broad look at the principles of analytical chemistry, for students not majoring in chemistry. Basic laboratory techniques and operations of quantitative analysis. Not acceptable for major credits except by special arrangement. Prerequisite, Chemistry 2 or 4. 2 lectures, 2 3-hour laboratory hours. Credit, 4. Mr. Roberts, Mr. Proctor.

29. (I) and (II) Qualitative Analysis

The fundamental principles of ionic equilibria and the chemistry of important cations and anions, with particular reference to semimicro qualitative analysis. Prerequisite, Chemistry 2 or 4. 2 class hours, 6 laboratory hours. Credit, 4. Mr. Smith, Mr. Wynne.

32. (II) Quantitative Chemical Analysis

A detailed study of the principles and practices of titrimetric and gravimetric analysis; separation methods; introduction to physical methods. Primarily for chemistry majors and others needing a more detailed treatment than is given in Chemistry 27. Prerequisite, Chemistry 29. 2 lectures, 2 4-hour laboratory periods. Credit, 4. Mr. Roberts, Mr. Proctor.

33. (I) and (II) Organic Chemistry

A short course intended to satisfy the requirements in this field for all students who do not specialize in chemistry. Prerequisites, Chemistry 1 and 2. 3 class hours, 1 3-hour laboratory period. Credit, 4. Organic chemistry staff.

51. (I) 52. (II) Organic Chemistry

A survey of the properties, preparation and reactions of the important classes of aliphatic and aromatic compounds. Prerequisite: A course in qualitative or quantitative analysis. 3 class hours, 1 or 2 3-hour laboratory periods. The 2 3-hour laboratory periods reserved for and required of chemistry majors. Credit, 4 or 5. Mr. Hunsberger, Mr. McWhorter.

65. (I) 66. (II) Physical Chemistry

A study of the fundamental theories and laws of physical chemistry. Prerequisites, Chemistry 32 or 27; Mathematics 30; Physics 26. 3 class hours. Credit, 3. Mr. Smith, Mr. Stein, Mr. Stidham, Mr. Stengle.

67. (I) 68. (II) Physical Chemistry Laboratory

Experience in modern physico-chemical techniques. Prerequisites, Chemistry 32; Mathematics 30; Physics 26; or permission of instructor. Concurrent enrollment in Chemistry 65, 66. 1 3-hour laboratory period. Credit, 1. Mr. Stengle, Mr. Stidham, Mr. Rowell

77. (I) Advanced Physical Chemistry

Topics such as chemical thermodynamics, statistical mechanics, introductory quantum chemistry and theories of gases, liquids and solids. Prerequisites, Chemistry 65 and 66. 3 class hours. Credit, 3. Mr. Stein, Mr. Stidham.

79. (I) Elementary Biochemistry

The more important facts relating to biological materials and processes. Designed primarily for students not eligible for courses 93 or 94. Not open to chemistry majors. Prerequisite, Chemistry 33 or 51. 3 class hours, 1 3-hour laboratory period. Credit, 4. Mr. Little.

80. (II) Clinical Chemistry (Blood and Urine Analysis)

Collection and preparation of samples for analysis; standardization of glassware and the preparation of reagents; description of colorimeters and the determination of certain significant compounds. 1 class hours, 1 3-hour laboratory period. Credit, 2. Mr. Little.

81. (I) Organic Chemistry

An intensive survey of aliphatic and aromatic chemistry with emphasis on scope and limitations of reactions, mechanisms, and recent developments. Admission by permission of instructor. Prerequisite, one year of Organic Chemistry. 3 class hours. Credit, 3. Mr. Cannon.

82. (II) Qualitative Organic Chemistry

Identification of unknowns, both single and mixtures of organic compounds, by physical properties, reactions and preparation of derivatives. Admission by permission of instructor. Prerequisite, one year of Organic Chemistry. 2 class hours, 2 3-hour laboratory periods. Credit, 4. Mr. Cannon.

83. (I) Advanced Analytical Chemistry

The theory and techniques of special methods of analysis such as colorimetry, potentiometry, microscopy, ion exchange, electro-deposition and other recently developed methods of analysis. Prerequisites, Chemistry 32, 66. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Roberts.

84. (II) Radiochemistry

The character of atomic nuclei, nuclear reactions, radiation and its detection, and techniques for the study and utilization of radionuclides. Prerequisite, Chemistry 32 or permission of instructor. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Richason.

86. (II) Theoretical Inorganic Chemistry

A theoretical survey of inorganic chemistry based on periodic relationships. Topics include: atomic structure, nuclear chemistry, valence concepts, coordination compounds, and acid-base theory. Prerequisite, Chemistry 65. 3 class hours. Credit, 3. Mr. Smith.

87. (I) Inorganic Chemistry of the Common Elements

A systematic consideration of the chemistry of the common elements and their compounds, based on periodic relationships and modern concepts of structure and bonding. Prerequisite, Chemistry 86 or permission of the instructor. 3 class hours. Credit, 3. Mr. Zajicek, Mr. Chandler.

88. (II) History of Chemistry

An historical and biographical survey of chemistry and chemists through a study of the development of new ideas and the establishment of new theories and laws. 3 class hours. Credit, 3.

91. (I) Chemical Literature

Intended to give facility in the location of information of a chemical nature. Prerequisites, Chemistry 52, 66, and a reading knowledge of German or permission of instructor. 1 class hour. Credit, 1. Mr. Oberlander.

DAIRY AND ANIMAL SCIENCE

93. (I) 94. (II) General Biochemistry

A broad introduction to the general field of biochemistry for students majoring in chemistry or in the biological sciences, and a background for more advanced or specialized study in this field. Prerequisites, Chemistry 51 and 52 or their equivalent. 3 class hours, 1 3-hour laboratory period. Credit, 4. Mr. Little.

98. (II) Introduction to Research

Admission only by permission of the department. To each student is assigned some special subject or problem in one of the several fields of chemistry. Hours by arrangement. 10 laboratory hours. Credit, 5. Staff.

THE CLASSICS

Instructors in Romance Languages

GREEK

1. (I) 2. (II) Elementary Greek (1961-62)

For students with no previous study of Greek. Elements of the language and readings in prose and poetry. No credits in this course may be applied toward a degree until the close of the second semester, except upon special recommendation from the Provost. Given in alternate years. 3 class hours. Credit, 3. Mr. Greenfield.

5. (I) 6. (II) Intermediate Greek (1962-63)

For students with one year of college Greek or its equivalent. Intensive grammar review. Readings in Homer, Plato, and others. Given in alternate years. Prerequisites, Greek 1, 2, or equivalent. 3 class hours. Credit, 3. Mr. Greenfield.

LATIN

1. (I) 2. (II) Elementary Latin

For students with no previous study of Latin. Elements of the language and introductory reading. No credits in this course may be applied toward a degree until the close of the second semester, except upon special recommendation from the Provost. 3 class hours. Credit, 3.

5. (I) 6. (II) Intermediate Latin

For students with one year of college Latin or its equivalent. Intensive grammar review. Introduction to Latin literature: Virgil, Horace, Livy, and others. Prerequisites, Latin 1, 2, or equivalent. 3 class hours. Credit, 3.

DAIRY AND ANIMAL SCIENCE

Head of Department: PROFESSOR D. J. HANKINSON; PROFESSORS W. BLACK, FOLEY, GAUNT; ASSISTANT PROFESSORS BAKER, D. BLACK, BUCK, EVANS, MCFADDEN, POTTER.

ANIMAL SCIENCE

2. (II) Introduction to Animal Science

Tools, trends, problems and opportunities in animal science. The impact of recent developments in genetics, nutrition, physiology and management on the livestock industry is illustrated. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Baker.

DAIRY AND ANIMAL SCIENCE

33. (II) Elements of Meat Packing

The packing industry, classes and grades of livestock and meat, meat inspection, grading, slaughtering procedures and preparation of wholesale cuts. Field trips cost approximately \$5.00. 1 class hour, 1 4-hour laboratory period. Credit, 3. Mr. Buck.

51. (I) Fundamentals of Animal Nutrition

Principles of nutrition, including study of the nature and function of nutrients, and requirements for maintenance and production in ruminants and swine. 3 class hours. Credit, 3. Mr. MacFadden.

52. (II) Feeds and Feeding

The principles of nutrition applied to practical livestock feeding. Methods of feed evaluation, feeding standards, formulation of rations, and composition and nutritive value of feeds. Prerequisite, Animal Science 51. 2 2-hour laboratory periods. Credit 2. Mr. MacFadden.

54. (II) Meat Processing

The preparation of retail cuts of meat and manufactured meat products; their preservation and care. 1 class hour, 1 4-hour laboratory period. Credit, 3. Mr. Buck.

56. (II) Livestock Production

Beef, sheep and swine production in the U. S. and New England. Enterprise types, feeding systems, selection procedures, management and marketing. Field trips cost approximately \$5.00. 3 class hours, 1 2-hour laboratory period. Credit, 4. Mr. Baker.

65. (I) Physiology of Reproduction

Comparative aspects of anatomy, embryology, endocrinology and physiology of the reproductive system, particularly in farm mammals. Concepts of fertility and sterility, and their evaluation. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. W. Black.

66. (II) Applied Animal Genetics

The mechanisms of heredity and variation in farm mammals; the role of selection procedures and breeding systems in genetic improvement of livestock and their evaluation. Prerequisite, Zoology 53. 3 class hours. Credit, 3. Mr. Gaunt.

75. (I) Milk Secretion

Lactation in all its aspects, including anatomy of the mammary gland, development of the bovine udder, endocrine control of secretion, and applications in herd management. 1 class hour, 1 2-hour laboratory period. Credit, 2. Mr. Foley.

78. (II) Dairy Cattle Management

Dairy cattle and milk production in the U. S. and New England, including study of managerial problems concerned in successful dairying. Field trips cost approximately \$20.00. 2 class hours, 2 2-hour laboratory periods. Credit, 4. Mr. Foley.

DAIRY TECHNOLOGY

79. (I) Light Horse Management

Breeds and adaptations; fundamentals of selection, feeding, training and management; tack and its care, brief introduction to equitation. Field trips cost approximately \$5.00. Open to all University students. 1 class hour, 1 2-hour laboratory period. Credit, 2. Mr. Baker.

96. (II) Seminar

For Animal Science majors. 1 2-hour laboratory period. Credit, 1. Staff.

97. (I) 98. (II) Special Problems in Animal Science

Problem work under staff supervision, intended to introduce qualified Seniors to research methods in some phase of animal science, e.g., nutrition, genetics, reproduction, meats, lactation. Credit, 1-3. Staff.

DAIRY TECHNOLOGY

25. (I) General Dairying

Introductory course in dairy technology presenting the general processing, distribution, and selection of milk and milk products. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Hankinson.

52. (II) Market Milk

The various phases of the fluid milk industry from procurement through processing and distribution. 2 class hours, 1 4-hour laboratory period. Credit, 4. Mr. Evans.

75. (I) Dairy Chemistry

The physical and chemical principles which aid in explaining the behavior of milk and milk products in the various technological operations. Application of quantitative and qualitative analyses to dairy products. 1 class hour, 1 4-hour laboratory period. Credit, 3. Mr. Potter.

77. (I) Butter and Cheese Making

A study emphasizing production and storage of the dairy by-products, butter, cheese, concentrated and dried milks. 2 class hours, 2 3-hour laboratory periods. Credit, 4. Mr. Evans, Mr. Potter.

78. (II) Ice Cream Making

The theory and practices involved in the production and distribution of ice cream and related products. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Potter.

95. (I) 96. (II) Seminar

For Dairy Technology majors. 1 class hour. Credit, 1. Staff.

97. (I) 98. (II) Special Problem in Dairy Technology

Problem work under staff supervision, intended to introduce qualified Seniors to research methods in some phase of dairy technology. Credit, 1-3. Staff.

ECONOMICS

Head of Department: PROFESSOR PHILIP L. GAMBLE. PROFESSORS MORRIS*, SCHOEFFLER, HOWARD; ASSOCIATE PROFESSOR BLACKMAN; ASSISTANT PROFESSORS MARTIN AND MEIER; MESSRS. MILLER, F. SMITH, R. SMITH.

12. (II) Economic History of the United States

Important aspects of the evolution of our modern economic system; social, technological, and other changes which have affected economic institutions; public policy problems involved. 3 class hours. Credit, 3. Mr. F. Smith.

25. (I) and (II) Elements of Economics

Definitions, principles of production, exchange, the distributing methods of allocation of income and revenue. 3 class hours. Credit, 3. Mr. Gamble, and Staff.

26. (II) Problems of the National Economy

A continuation of Course 25. Current problems, including international economic planning in peace and war. Prerequisite, Economics 25. 3 class hours. Credit, 3. Mr. Miller and Staff.

53. (I) Money, Banking and Credit

The development and operation of the monetary and banking systems of the United States; problems of achieving full employment and price stability through monetary controls. Prerequisite, Economics 25. 3 class hours. Credit, 3. Mr. Gamble.

54. (II) Money, Income and Monetary Policy

The relationship between money, income and monetary policy. An examination of the relationships between individuals, banks, money markets, governments and central banks. Prerequisites, Economics 25 and either Economics 53 or Finance 55. 3 class hours. Credit, 3. Mr. Gamble.

55. (I) Economics of Consumption and Personal Finance

Patterns of consumption, standards of living and the sources and expenditure of individual and family incomes. Prerequisite, Economics 25. 3 class hours. Credit, 3. Mr. Miller.

56. (II) Business Fluctuations and Forecasting

Nature and causes of business fluctuations; methods of forecasting; government policy for stability; utility of available statistical data as guides to private and public policy. Prerequisites, Economics 25, 53 or Finance 55. 3 class hours. Credit, 3. Messrs. Howard and Martin.

70. (II) The Structure of American Industry

Business enterprise, market competition, and economic development in American industries. The social effectiveness of industries analyzed through measures of industrial structure and market performance. Prerequisite, Economics 25. 3 class hours. Credit, 3. Mr. Howard.

* On leave of absence.

ECONOMICS

73. (I) Modern Economic Theory and Analysis

Micro-economic analysis: types of markets: applications of linear programming, theory of games and other techniques for rational business planning: balancing forces in free-enterprise economy. Prerequisite, Economics 25. 3 class hours. Credit, 3. Mr. Schoeffler.

77. (I) Economics of International Trade (1960-61)

Policies, principles, and practices of international trade. Prerequisite, Economics 25. 3 class hours. Credit, 3. Mr. Meier.

78. (II) Public Finance

Principles of public revenues and expenditures; systems and problems of taxation; use of taxes, expenditures, debt policy to provide full employment, economic growth and price stability. Prerequisite, Economics 25. 3 class hours. Credit, 3. Mr. Gamble.

79. (I) Labor Problems

Background of the labor movement and problems involved in the management-labor relationship and the efforts of management, unions and government to solve them. Prerequisite, Economics 25. 3 class hours. Credit, 3. Mr. Blackman.

80. (II) Labor Law and Legislation

Economics effects and historical survey of Federal and state laws and an analysis of important court decisions. Prerequisites, Economics 25, 79. 3 class hours. Credit, 3. Mr. Blackman.

82. (II) Economic Development

Economic problems of underdeveloped countries and the policies necessary to induce growth. Individual projects will be required. Prerequisites, Economics 25, 26. 3 class hours. Credit, 3. Mr. Meier.

83. (I) Social Control of Business

The formal and informal methods and efforts to maintain, supplement and moderate competition, and the substitution of regulation or public enterprises for competition. Prerequisite, Economics 25. 3 class hours. Credit, 3. Mr. Howard.

84. (I) Comparative Economic Systems

The structure, operation, and underlying ideology of the major contemporary forms of social-economic organization. Emphasis on the Soviet Union and the United States. Prerequisite, Economics 25. 3 class hours. Credit, 3. Mr. Schoeffler.

86. (II) Doctrinal Backgrounds of Contemporary Theory

Foundations of classical theory from physiocracy through Mill; neoclassicism and its chief variants, the Lausanne, Austrian and English schools; dissenters Marx, German historical school, Veblen. Prerequisite, Economics 25. 3 class hours. Credit, 3. Mr. Miller.

95. (I) 96. (II) Seminar

Research in economic theory; problems of labor, commerce, and industry. If desirable, some other economic study may be substituted. Prerequisites, Economics 25 and 26. 1 or 2 2-hour conferences. Credit, 1 to 3.

EDUCATION

DEAN: PROFESSOR ALBERT W. PURVIS. PROFESSORS OLIVER, WYMAN; ASSOCIATE PROFESSORS ANTHONY, O'LEARY, ROGERS; ASSISTANT PROFESSORS BARFIELD, BEUCLER, COHEN, CURTIS, EDDY, HALL, JONES, KORNEGAY, McMANAMY, PIPPERT.

9. (I) (II) Directed Observation

Fifteen hours in the Laboratory School in the freshman year. Prerequisite to the Elementary Education Block. Credit, 0.

39. (I) (II) Directed Observation

Twenty hours in the Laboratory School in the sophomore year. Prerequisite to the Elementary Education Block. Credit, 0.

51. (I) (II) History of Education

Educational movements are traced from early Greece to the present with the aim of better understanding of modern problems. 3 class hours. Credit, 3. Mr. P. Eddy, Mr. Cohen.

52. (I) (II) Principles and Methods of Teaching

By means of discussion, case studies, and current educational literature, teaching ideals and procedures are set up and applied to the major teaching fields. 3 class hours. Credit, 3. Mr. Anthony, Mr. Barfield.

53. (I) (II) Educational Tests and Measurements

The most serviceable tests for measuring achievement are considered; test construction, administration, scoring, and interpretation of results are studied and applied to the classroom. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Pippert.

59. (I) (II) Directed Observation

Twenty hours in the Laboratory School in the junior year. Prerequisite to the Elementary Education Block. Credit, 0.

60. (I) (II) Elementary School Curriculum

The elementary school curriculum from the standpoint of content and methodology. Emphasis placed on the unit method and the activity programs. 3 class hours. Credit, 3. Mr. Rogers.

61. (I) (II) Teaching of Elementary Reading and Language Arts

Discussions and demonstrations of principles and effective practices in the teaching of all phases of the language arts. 3 class hours. Credit, 3. Miss O'Leary.

62. (I) (II) Teaching of Elementary Arithmetic

Accepted methods and materials in the teaching of arithmetic in the elementary grades will be studied and demonstrated. 3 class hours. Credit, 3. Mr. Hall.

64. (I) (II) Principles of Elementary Education

The aim, organization, program, pupil population, of the elementary school and the relationship between elementary and secondary school are the areas of concentration. 3 class hours. Credit, 3. Miss McManamy.

CHEMICAL ENGINEERING

66. (I) (II) Preparation and Use of Audio-Visual Materials

Study is made of available machines, materials and techniques for teaching groups of students. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Wyman.

72. (I) Vocational Education in Agriculture

A survey of vocational agricultural education and an introduction to teaching of vocational agriculture at the secondary level. Admission by permission of instructor. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Jones.

73. (I) (II) Apprentice Teaching in Agriculture

A full year in absentia normally following the junior year, teaching agriculture, horticulture, and related subjects under a supervising teaching in selected schools. Prerequisites, Education 72 and 75. Credit, 6. Mr. Jones.

75. (II) Technique of Teaching Vocational Agriculture

The materials, methods, policies, and special requirements of Massachusetts for teaching vocational agriculture and related subjects in high schools and in special county agricultural schools. Prerequisite, Education 72 or permission of the instructor. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Jones.

77. (I) (II) Principles of School Guidance

The need for guidance in the schools, the nature of guidance, and an overview of an adequate guidance service for a school system. 3 class hours. Credit, 3. Mr. Pippert.

85. (I) (II) Observation and Student Teaching

In cooperating schools within commuting distance of the University, under staff supervision. Given only in the elementary and secondary concentrated blocks. Prerequisites for secondary block: Education 51 and Psychology 56; for elementary block: Education 9, 39, 51, 59, 64; Psychology 94 or Home Economics 70. Credit, 6. Mr. Beucler, and the Staff.

88. (I) (II) Secondary School Curriculum

Learning materials and activities and their organization in various teaching fields. 2 class hours, 1 2-hour laboratory work. Credit, 3. Mr. Kornegay, Mr. Barfield.

ENGINEERING

CHEMICAL ENGINEERING

Head of Department: PROFESSOR E. E. LINDSEY. ASSOCIATE PROFESSOR CASHIN;
ASSISTANT PROFESSORS DUUS, KIM.

25. (I) 26. (II) Fundamentals

An introduction to the nature and scope of chemical engineering through the study of selected chemical processes and of material and energy balances. Prerequisites, Chemistry 2 or 4; Physics 26 or 6 for Course 26. 2 class hours. Credit, 2. Mr. Lindsey, Coshin.

55. (I) Unit Operations I

The unit operations of fluid flow, heat transfer and evaporation. The thermodynamic properties of matter. Prerequisites, Chemical Engineering 26; Mathematics 30 or 31; 3 class hours, 2 3-hour computation periods. Credit, 5. Mr. Kim.

56. (II) Unit Operations II

A continuation of Course 55; including the additional unit operations of distillation, gas absorption, liquid extraction, crystallization, filtration, mixing, crushing and grinding. Prerequisite, Chemical Engineering 55. 3 class hours, 2 3-hour computation periods. Credit, 5. Mr. Kim.

58. (II) Organic Chemical Technology

Some of the unit processes involved in the manufacture of organic chemicals. Includes nitration, amination, halogenation, oxidation and esterification. Prerequisite, Chemistry 51. 3 class hours. Credit, 3. Mr. Duus.

75. (Summer) Instrumentation

A detailed study of the underlying principles and practices in indicating, recording and controlling instruments used on industrial process equipment. Prerequisite, Physics 26 or 6. 3 40-hour weeks. Credit, 3. Mr. Cashin, Mr. Lindsey.

77. (I) Elements of Unit Operations

For other than chemical engineering majors. Some of the unit operations of process industries. Emphasis on the principles and types of equipment, rather than on the quantitative aspects and design. Prerequisites, Chemistry 30; Physics 25, 26 or 6. 3 class hours. Credit, 3. Mr. Lindsey, Mr. Duus.

78. (II) Advanced Unit Operations

A more detailed study of certain unit operations. Prerequisite, Chemical Engineering 56. 2 class hours. Credit, 2. Mr. Cashin.

81. (I) Heat-energy Relations

Types of energy, energy balances, second law, thermodynamic functions, P-V-T relations of fluids, compression and expansion processes. Prerequisites, Chemistry 66. 3 class hours. Credit, 3. Mr. Duus.

82. (II) Industrial Equilibria and Kinetics

Phase and chemical equilibria and rates of reaction in chemical processes from the industrial point of view. Prerequisites, Chemistry 66; Chemical Engineering 81. 3 class hours. Credit, 3. Mr. Duus.

83. (I) Survey of Nuclear Engineering (I)

An introduction to the principles of reactor physics and a survey of problems involved in the design and operation of nuclear reactors. Also problems in heat transfer, shielding, instrumentation and waste disposal. Prerequisites, Chemistry 1, 2; Physics 25, 26 or 5, 6; Mathematics 29, 30, or equivalent; and permission of the instructor. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Marcus.

CIVIL ENGINEERING

84. (II) Survey of Nuclear Engineering (II)

A continuation of Chemical Engineering 83 with emphasis on reactor physics. Prerequisite: Chemical Engineering 83. 2 class hours, 3 laboratory hours. Credit, 3. Mr. Marcus.

87. (I) Process Equipment Design

The design of process equipment for the chemical industries; riveted pressure vessels, welded pressure vessels, piping, attachments and closures, etc. Prerequisites, Chemical Engineering 55; Civil Engineering 53. 1 class hour, 1 3-hour laboratory period. Credit, 2. Mr. Lindsey.

88. (Summer) Chemical Engineering Laboratory

Study of pilot plant size equipment illustrating some unit operations. Emphasis on the securing of accurate data, correct operating techniques, and on report writing. Prerequisite, Chemical Engineering 56. 5 8-hour laboratory days per week for 3 weeks. Credit, 3.

93. (I) 94. (II) Comprehensive Problems

The solution of comprehensive problems which requires the application and integration of a number of the principles studied in previous courses in chemistry and chemical engineering. Prerequisites, Chemical Engineering 56; Chemistry 66. 2 class hours, 1 3-hour computation period. Credit, 3. Mr. Cashin.

95. (I) 96. (II) Seminar

Preparation and discussion of professional topics of interest to chemical engineers. 1 class hour. Credit, 1.

97. (I) 98. (II) Projects

Investigation and report on an elementary chemical engineering problem. Prerequisites, Chemical Engineering 56, 88. 2 4-hour laboratory periods. Credit, 3.

CIVIL ENGINEERING

Head of Department: PROFESSOR MERIT P. WHITE. PROFESSORS MARSTON, OSGOOD, HENDRICKSON, MARCUS; ASSOCIATE PROFESSORS FENG, GROW, CARVER, BOYER, HIGGINS; ASSISTANT PROFESSORS PECK, DZIALO, HARRIS.

27. (I) Plane Surveying

Elements of plane surveying: taping, transit, level, stadia, topographic surveying and mapping, care and adjustment of instruments. Prerequisite, Trigonometry. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Boyer.

28. (Summer) Surveying Practice I

Property surveys, topographic surveys by stadia and plane table, triangulation. Prerequisite, Civil Engineering 27 or 31. 3 40-hour weeks. Credit, 3. Mr. Boyer.

30. (Summer) Surveying Practice II

Preliminary route survey with plan, profile, cross sections, slope stakes, earthwork quantities. Prerequisite, Civil Engineering 32. 3 40-hour weeks. Credit, 3. Mr. Boyer.

31. (I) Surveying I

Theory of surveying. Use, care, and adjustment of tape, transit, and level; traverse computation; topographic surveying and mapping; property surveying. Prerequisite, Trigonometry. 1 class hour, 2 3-hour laboratory periods. Credit, 3. Mr. Boyer.

32. (II) Surveying II

Route surveys; centerline layout; simple, compound, reverse, parabolic, and spiral curves; construction surveys; earthwork computation; chainage equations; astronomical observations. Prerequisite, Civil Engineering 31. 2 class hours. 1 3-hour laboratory period. Credit, 3. Mr. Boyer.

34. (I) and (II) Statics

Topics considered: resultants of force systems, equilibrium of forces using algebraic and graphical methods; friction, first and second moments, center of gravity. Prerequisite, Integral Calculus concurrently. 3 class hours. Credit, 3.

52. (I) and (II) Dynamics

Motions of particles and rigid bodies and the force systems causing these motions. Prerequisite, Civil Engineering 34. 3 class hours. Credit, 3.

53. (I) and (II) Strength of Materials I

Simple and combined stresses and strains in tension, compression and shear; torsion; stresses and deflections in beams. Prerequisite, Civil Engineering 34. 3 class hours. Credit 3.

55. (I) Transportation Engineering I

Major transportation systems with emphasis on geometric design of highways, transportation and traffic studies, and design and operation of railroads. Prerequisite, Civil Engineering 32. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Boyer.

62. (II) Engineering Materials

A study of engineering materials with particular emphasis on mechanical properties. The correlation between experimental observations and theory. Prerequisite, Civil Engineering 53. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Peck.

63. (I) Testing Materials

Laboratory methods for the determination of the physical properties of engineering materials. For mechanical engineering students. Prerequisites, Mechanical Engineering 35 or 31; Civil Engineering 53 concurrently. 1 3-hour laboratory period. Credit, 1. Mr. Peck.

70. (II) Theory of Structures I

An elementary treatment of statically determinate structures, especially buildings and bridges. Prerequisite, Civil Engineering 53. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Osgood.

71. (I) Structural Design

The choosing and proportioning of the elements and connections of metal structural frames of buildings and bridges. Designs are made. Prerequisite, Civil Engineering 70. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Osgood.

CIVIL ENGINEERING

72. (I) Theory of Structures II

The analysis of statically indeterminate structures by several appropriate methods. Prerequisite, Civil Engineering 70. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Osgood.

73. (II) Reinforced Concrete

The analysis and design of reinforced concrete structures. Prerequisite, Civil Engineering 53. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Osgood.

74. (II) Theory of Structures III

The analysis and design of complex or special structures in metal, concrete or wood. Prerequisites, Civil Engineering 71, 72; 73 concurrently. 3 class hours. Credit, 3. Mr. Osgood.

75. (I) and (II) Fluid Mechanics

A study of the properties and behavior of fluids, involving laws of hydrostatics, kinetics and dynamics. Flow measurement, hydraulic machinery, flow in pipes and open channels. Prerequisite, Civil Engineering 52. 3 class hours. Credit, 3. Mr. Carver, Mr. Higgins.

76. (I) and (II) Fluid Mechanics Laboratory

Applications of fluid mechanics theory. Flow measurement and behavior of fluids in pipes and open channels. Prerequisite, Civil Engineering 75 concurrently. 1 3-hour laboratory period. Credit, 1. Mr. Carver, Mr. Higgins.

77. (II) Sanitary Engineering I

Water demand and quantity of sewage, hydrology relating to water resources and drainage, water collection and distribution, sewer systems, and pumping stations. Prerequisite, Civil Engineering 75, concurrently. 3 class hours. Credit, 3. Mr. Feng.

78. (I) Sanitary Engineering II

Water and sewage laboratory analysis, stream pollution, water and sewage treatment, industrial waste problems. Prerequisite, Civil Engineering 75, concurrently. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Feng.

79. (I) Principles of Sanitary Engineering

Designed for students in the Department of Public Health, covering phases of Civil Engineering 77 and 78 with consideration of the non-engineering background of the student. Admission by permission of the instructor. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Feng.

80. (II) Soil Mechanics I

Classification of soil for engineering purposes. Analysis of earth masses for seepage, stress and strain. Prerequisite, Geology 50. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Hendrickson.

81. (I) Soil Mechanics II

Foundations and earth structures. Interpretation of borings. Analysis and design of piles, footings, piers, abutments, and retaining walls. Prerequisite, Civil Engineering 80. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Hendrickson.

82. (I) Soil Testing

Soil testing and sampling. Techniques of measuring permeability, consolidation, and shear. 1 class hour, 2 3-hour laboratory periods. Credit, 3. Mr. Hendrickson.

86. (II) Sanitary Engineering III

The hydraulics and chemistry relating to water and sewage treatment, layout and design of water and sewage treatment plants. Prerequisites, Civil Engineering 77 and 78. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Feng.

88. (II) Strength of Materials II

Investigation of stresses and strains in elements of machines and structures caused by static or dynamic loads. Prerequisite, Civil Engineering 53 with grade of A or B. 3 class hours. Credit, 3. Mr. White.

90. (II) Contracts and Specifications

Current practice and the legal aspects of preparing construction contracts; specifications and cost estimates. 3 class hours. Credit, 3. Mr. Grow.

91. (I) Surveying III

Elements of astronomical geodetic and photogrammetric surveying; coordinate systems and map projections. Prerequisite, Civil Engineering 32. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Boyer.

92. (I) Hydraulic Engineering

Analysis and design of hydraulic structures. Hydrology, water power estimates and economics, dams and appurtenances, reservoirs, turbines and pumps; a design of a typical hydroelectric development. Prerequisite, Civil Engineering 75. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Higgins.

93. (II) Introduction to Hydrodynamics

A mathematical treatment of the basic theorems of classical hydrodynamics including potential flow, conformal mapping, wave and vortex motion, Navier-Stokes equation and boundary layer theory. Prerequisite, Mathematics 32. 3 class hours. Credit, 3.

94. (II) Transportation Engineering II

The engineering aspects of traffic problems, geometric design of urban and rural highways including intersections, traffic signs and signals, and planning studies. Prerequisite, Civil Engineering 55. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Boyer.

96. (II) Professional Seminar

For senior civil engineering students. Current engineering projects and the professional aspect of the civil engineer's work are described by student reports. 1 class hour. Credit, 1.

97. (I) 98. (II) Civil Engineering Project

Investigation of a problem or completion of a project significant in civil engineering. Prerequisite, Average of 3.0 for preceding two semesters, and permission of department. Credit, 3.

ELECTRICAL ENGINEERING

ELECTRICAL ENGINEERING

Head of Department: PROFESSOR G. DALE SHECKLES. PROFESSORS AGARWAL, LANGFORD, ROYS; ASSOCIATE PROFESSORS BETT, EDWARDS, LAESTADIUS, MOHN; ASSISTANT PROFESSORS FITZGERALD, HERCHENREDER; MR. SCOTT. VISITING PROFESSORS GESSERT, LONGLEY.

41. (I) 42. (II) Circuit Analysis I and II

Analysis using differential relationships, free and forced responses, complex frequency, steps and impulses, poles and zeros. Network theorems, polyphase circuits, coupling and harmonics. Prerequisites, Mathematics 6 and Physics 6. 3 class hours, 1 3-hour computation and laboratory period. Credit, 4.

53. (I) 54. (II) Energy Conversion Systems I and II

Principles of operation and physical aspects of energy conversion systems with a detailed analysis of performance and control of transformers and rotating electrical machinery. Prerequisite, Electrical Engineering 42. 3 class hours, 1 3-hour laboratory period. Credit, 4.

55. (I) 56. (II) Electronics I and II

Physical phenomena of electronic conduction in solids, vacua, and gases. Applications include amplifiers, rectifiers, oscillators, multi-vibrators, inverse feedback systems, computers, and other basic circuits. 3 class hours, 1 3-hour laboratory period. Credit, 4.

57. (I) Electromagnetic Fields

Static and time varying electromagnetic fields using vector notation, Maxwell's equations, relations between field and circuit theory. Plane waves in dielectric and conducting media. Prerequisites, Electrical Engineering 42 with Mathematics 32 concurrently. 3 class hours. Credit, 3.

58. (II) Electrical Transmission and Transients

Electromagnetic transmission and radiation in the steady state in dielectrics and long lines. Introduction to electrical transients in lumped parameter linear circuits. Prerequisites, Electrical Engineering 57 and Mathematics 32. 3 class hours. Credit, 3.

61. (I) Fundamentals of Electrical Engineering

A study of basic laws of electrical science as they pertain to electric and magnetic circuits. Not open to electrical engineers. Prerequisites, Physics 6, Mathematics 31 or equal. 3 class hours, 1 3-hour laboratory period. Credit, 4.

62. (II) Basic Application of Electrical Engineering

A study of the general applications of the basic laws of electrical engineering in the fields of stationary and rotating electromechanical machinery and basic electronics. Not open to electrical engineers. Prerequisites, Electrical Engineering 61. 3 class hours, 1 3-hour laboratory period. Credit, 4.

65. (I) 66. (II) Electronics I and II

These courses are identical to the lecture portions of E.E. 55 and 56. They are not open to electrical engineers. Prerequisites, Physics 26 and Mathematics 31, or equivalents. 3 class hours. Credit, 3.

ELECTRICAL ENGINEERING

79. (I) Electrical Communications I

Theory of lumped and distributed passive circuits by classical and s-plane methods, with applications to communications and control. Prerequisite, Electrical Engineering 58. 3 class hours, 1 3-hour laboratory period. Credit, 4.

80. (II) Electrical Communications II

Active circuits and communication theory covering tube and semi-conductor circuitry with emphasis on aspects pertaining to information transmission. Prerequisite, Electrical Engineering 56. 3 class hours, 1 3-hour laboratory period. Credit, 4.

81. (I) Advanced Electrical Machinery

Modern methods of analysis, including two reaction, symmetrical component, matrix, vector-dyadic and tensor formulations. Applications include d-c and a-c motors and generators and amplidynes. Prerequisites, Electrical Engineering 54; 83 concurrently. 3 class hours, 1 3-hour laboratory period. Credit, 4.

83. (I) Transient Analysis

Fundamental equations of electrical, mechanical, and thermal systems, and their classical, operational, and transform solutions with a correlated study of functions of a complex variable. Prerequisite, Electrical Engineering 58. 3 class hours, 1 3-hour laboratory period. Credit, 4.

84. (II) Industrial Electronics and Control

Industrial electronic devices and their characteristics; basic circuits and their application to commercial equipment. Prerequisites, Electrical Engineering 55, 62 or 64. 3 class hours, 1 3-hour laboratory period. Credit, 4.

85. (Summer) Electrical Measurements

Theory and practice of electric and magnetic measurements, accuracy, precision, maximum possible and probable errors, and limitations of measurements and devices. Prerequisite, Electrical Engineering 42. 2 class hours, 1 3-hour laboratory period. Credit, 3.

86. (II) Power System Networks

Power transfer diagrams, voltage studies, system stability criteria, short-circuit calculations, and protective methods. Prerequisite, Electrical Engineering 58. 3 class hours, 1 3-hour laboratory period. Credit, 4.

87. (I) Principles of Switching Circuits

Logical design of switching circuits with emphasis on the scientific methods available; the analysis and synthesis of switching systems using electromagnetic, electronic and solid state devices. Prerequisites, Electrical Engineering 56 and 57. 3 class hours, 1 3-hour laboratory period. Credit, 4.

88. (II) Pulse Circuits

Generation, transmission and processing of information by means of pulses, with applications to computers, communications, radar and television. Prerequisite, Electrical Engineering 83. 3 class hours, 1 3-hour laboratory period. Credit, 4.

MECHANICAL ENGINEERING

90. (II) Feedback Control Systems I

Analysis and design of error-sensitive control systems. Analytical and graphical determination of steady state and transient performance; applications to electrical, mechanical, and hydraulic systems. Prerequisite, Electrical Engineering 83. 3 class hours. 1 3-hour laboratory period. Credit, 4.

92. (II) Principles of Electrical Design

The fundamentals of electric, dielectric, magnetic and heat-flow systems applied to the design, performance, rating and life of coils, transformers, machinery and other equipment. Prerequisite, Electrical Engineering 54. 2 class hours, 1 3-hour laboratory period. Credit, 3.

94. (II) Microwave Engineering

Fundamental principles of communications and electromagnetism and their application to the special problems of the generation, transmission, propagation and reception of microwaves. Prerequisite, Electrical Engineering 79. 3 class hours, 1 3-hour laboratory period. Credit, 4.

96. (II) Professional Seminar

Current engineering developments are discussed through student reports. Instruction is given in the preparation of papers for publication and in their presentation before technical audiences. 1 class hour. Credit 1.

97. (I) 98. (II) Special Problems

An individual investigation carried out under the supervision of an interested staff member, or a class study of recent advances and current problems in a specialized field of electrical engineering. Prerequisites, Consent of instructor. Credit, 1-4.

MECHANICAL ENGINEERING

Head of Department: PROFESSOR WILLIAM H. WEAVER. PROFESSORS BATES, DITTFACH, KEYSER, SWENSON; ASSOCIATE PROFESSORS DAY, LONGSTAFF, O'BYRNE, PATTERSON, SOBALA, WEIDMANN, ASSISTANT PROFESSORS COSTA, HOPKINS, KRONER, RISING, ROBERTS, TRUESWELL; MESSRS. GORR, SCHWIND, SPENCER, STEVENS.

1. (I) Engineering Drawing

The course purpose is to develop a working knowledge of orthographic projection including multi-view drawing, sections, dimensions, pictorial representations and lettering. 2 3-hour laboratory periods. Credit, 2.

2. (II) Descriptive Geometry

The theory of orthographic projection. Geometric concepts of lines, planes, solids; solution of engineering problems involving true sizes, angles and shapes by graphical methods. Prerequisite, Mechanical Engineering 1. 1 class hour, 2 3-hour laboratory periods. Credit, 3.

23. (Summer) Shop

The course is divided equally between machine shop and welding to develop an understanding of metal working processes. Not for Mechanical or Industrial engineers. Prerequisite, Mechanical Engineering I. 3 40-hour weeks. Credit, 3.

MECHANICAL ENGINEERING

27. (Summer) Shop

The course provides an understanding of the weldability of metals through manual and automatic welding processes. Prerequisite, Mechanical Engineering I. 3 40-hour weeks. Credit, 3.

28. (Summer) Machine Shop

The course provides an understanding of the machining of metals through the use of standard machine tools. Prerequisite, Mechanical Engineering I. 3 40-hour weeks. Credit, 3.

29. (Summer) Machine Shop and Welding

Manual and automatic welding processes. Theory of welding, machine tool operation, fits, tolerances and measurements. Prerequisite, Mechanical Engineering I. 5 25-hour weeks. Credit, 4.

35. (I) Engineering Materials and Processes

The methods of producing, fabricating and usage of engineering materials. The determination of physical characteristics through laboratory testing. Inspection trips. Prerequisite, Chemistry 2 or 4; Physics 6 taken previously or concurrently. 3 class hours, 1 3-hour laboratory period. Credit, 4.

46. (II) Fundamentals of Metallurgy

Physical metallurgy involving crystal structure, solid solutions, diffusion in the solid state, freezing of metals, metal hardening, annealing, equilibrium diagrams. Heat treating processes. Prerequisite, Mechanical Engineering 35 or Chemistry 66. 2 class hours, 1 3-hour laboratory period. Credit, 3.

63. (I) Engineering Thermodynamics I

The application of the laws of heat to various energy-transforming devices, including ideal and actual cycles of steam, internal combustion engines and air compressors. Prerequisites, Physics 5 and 6; Mathematics 30 or 31. 3 class hours. Credit, 3.

64. (II) Engineering Thermodynamics II

A study of liquids and vapors, thermodynamic cycles, energy transformations, the transfer of heat plus appropriate problems. Prerequisite, Mechanical Engineering 63. 3 class hours. Credit, 3.

67. (II) Mechanical Instrumentation Laboratory

The calibration and application of instruments used in the testing of mechanical engineering apparatus. Prerequisite, Mechanical Engineering 63. 1 3-hour laboratory period. Credit, 1.

68. (II) Kinematics

Principles of mechanism, including velocity and acceleration diagrams, instant centers, gear teeth and gear trains, cams, and various speed transmissions. Prerequisites, Mechanical Engineering I; Civil Engineering 52. 2 class hours, 1 3-hour laboratory period. Credit, 3.

74. (I) and (II) Basic Aerodynamics

The basic concepts of applied aerodynamics, including properties of air, ideal fluid flow, airfoils and their properties, aircraft performance and stability. Prerequisite, Civil Engineering 76. 3 class hours. Credit, 3.

MECHANICAL ENGINEERING

75. (I) Steam Power Plants

The steam power plant, including boilers, stokers, fuels, combustion, steam generation, prime movers, and auxiliary equipment, and engineering problems involved in design and operation. Prerequisite, Mechanical Engineering 64. 3 class hours. Credit, 3.

76. (II) Refrigeration and Air Conditioning

Fundamental principles of thermodynamics as applied to refrigeration in industrial processes and the control of temperature, humidity and motion of air in buildings. Prerequisite, Mechanical Engineering 64. 3 class hours. Credit, 3.

77. (I) Internal Combustion Engines

The thermodynamic and performance aspects of reciprocating gasoline and Diesel engines, steady flow gas turbines, turbo-jet engines and rockets. Prerequisite, Mechanical Engineering 64. 3 class hours. Credit, 3.

79. (I) Mechanical Engineering Laboratory I

Standard performance tests of steam, gasoline and Diesel engines, fans, turbines, compressors, and refrigeration systems. Emphasis is placed on following the appropriate Power Test Code. Prerequisites, Mechanical Engineering 67 for M. E. majors; Mechanical Engineering 63 for non M. E. majors. 1 3-hour laboratory period. Credit, 1.

80. (II) Mechanical Engineering Laboratory II

Advanced project experimental work in all phases of Heat Power equipment. Prerequisite, Mechanical Engineering 79. 2 3-hour laboratory periods. Credit, 2.

81. (I) Experimental Mechanical Engineering

Performance tests on mechanical engineering equipment. Calibration and application of instruments used in these tests. For industrial engineering majors. Prerequisite, Mechanical Engineering 63. 2 3-hour laboratory periods. Credit, 2.

82. (II) Heat Transfer

A study of the mechanisms of heat transfer: conduction, convection and radiation, with engineering applications. Prerequisites, Mechanical Engineering 63; Mathematics 32 or 92. 3 class hours. Credit, 3.

83. (I) Machine Design

Principles involved in the design of various machine parts. Related topics such as economy of manufacture, safety, styling, invention and creativity. Prerequisites, Civil Engineering 53; Mechanical Engineering 2, 27, 28, 68. 2 class hours, 1 3-hour laboratory period. Credit, 3.

84. (II) Basic Engineering Analysis

The application of mathematical solutions to problems in vibrations, elasticity, fluid mechanics and dynamics. The analysis of the problems and the derivation of the governing equations. Prerequisite, Mathematics 32 or 92. 3 class hours. Credit 3.

INDUSTRIAL ENGINEERING

85. (I) Dynamics of Machinery

Elements of vibration theory, vibration isolation, absorbers, instrumentation, analysis of equivalent masses and shaft systems. Dynamic balancing. Prerequisites, Civil Engineering 52; Mechanical Engineering 68. 3 class hours, 1 3-hour laboratory period. Credit, 4.

86. (II) Advanced Machine Design

Continuation of Course 83. Additional elementary parts are analyzed and some complete machines studied. Emphasis on invention and creativity. Prerequisite, Mechanical Engineering 83. 2 class hours, 1 3-hour laboratory period. Credit, 3.

87. (I) Engineering Thermodynamics III

Topics investigated include steam turbines, steam power plants, refrigeration, high-velocity flow, and shock phenomena. Prerequisite, Mechanical Engineering 64. 3 class hours. Credit, 3.

89. (I) Instrumentation

A study of mechanical instrumentation with mechanical-electrical transducers emphasized. A few heat power experiments included. For electrical engineering majors or permission of instructor. Prerequisite, Mechanical Engineering 64. 1 class hour, 1 3-hour laboratory period. Credit, 2.

90. (II) Advanced Metallurgy

Advanced topics in engineering metallurgy, including X-ray diffraction and X-ray fluorescent analysis. Prerequisite, Mechanical Engineering 46. 2 class hours, 1 3-hour laboratory period. Credit, 3.

92. (II) Electrical Engineering Materials

The structure of metals; metallic solids; failure of metallic substances; metallic electric and magnetic properties; ultra high-purity; metals; plastics; ceramics; electrodeposition and welding. Prerequisites, Physics 5, 6, 7, and Chemistry 1, 2, or equivalent courses. 2 class hours. Credit, 2.

93. (I) Nomography

The construction of functional scales, alignment charts and proportional charts. The use of determinants in the construction of alignment charts. Prerequisite, Mathematics 2, 6 or 29. 1 class hour, 1 3-hour laboratory period. Credit, 2.

95. (I) Professional Seminar

Presentation of papers on important subjects and recent development in the field of mechanical engineering. Prerequisite, Senior standing. 1 class hour. Credit, 1.

97. (I) 98. (II) Experimental Mechanical Engineering

Special work in mechanical engineering for a senior thesis. Admission by permission of instructor. Credit, 3.

INDUSTRIAL ENGINEERING

26. (Summer) Tool Engineering

The principles of design of jigs, fixtures, dies and gauges. The economics of tooling as influenced by intermittent or continuous manufacturing and by volume. Prerequisite, Mechanical Engineering 28. 3 40-hour weeks. Credit, 3.

INDUSTRIAL ENGINEERING

51. (I) Industrial Management Principles

The principles of organization and management and their application to the problems of the industrial plant. For industrial engineering majors. Prerequisite, Junior standing. 3 class hours. Credit, 3.

53. (I) Methods and Standards Engineering

The principles involved in the simplification of the work pattern, the design of the work place, and in the establishment of production standards. Prerequisite, Statistics 77, previously or concurrently. 3 class hours, 1 3-hour laboratory period. Credit, 4.

54. (II) Engineering Economy

A study of the bases for comparison of alternatives in engineering projects, break-even and minimum cost points, evaluation of proposals, the economic selection and replacement of structures and machines. Prerequisites, Economics 25; Mathematics 6; Industrial Engineering 79. 3 class hours. Credit, 3.

75. (I) Job Evaluation

The principles used to determine an evaluation of all occupations in order to establish an equitable rating between them, to establish sound wage and salary policies. Prerequisite, Industrial Engineering 51. 2 class hours. Credit, 2.

77. (I) Factory Planning and Layout

The principles applying to the determination and development of the physical relationship between plant, equipment and operators considering the economy and effectiveness of operation. Prerequisites, Mechanical Engineering 2; Industrial Engineering 79 previously or concurrently. 1 class hour, 1 3-hour laboratory period. Credit, 2.

78. (II) Production Control

A study of the principles used to regulate production activities in keeping with the manufacturing plan. Prerequisites, Industrial Engineering 51; Industrial Engineering 79 concurrently. 3 class hours. Credit, 3.

79. (I) Industrial Engineering Problems

The theory of probability, the principles of mathematical programming applied to the solution of problems in inventory control, production control, quality control, production standards, work measurement. Prerequisites, Industrial Engineering 53; Mathematics 57; Statistics 77. 3 class hours. Credit, 3.

80. (II) Cost Control Engineering

The principles for pre-determining expenses for the factors of production, the comparison of results with estimates to determine and deal with the causes of expense variations. Prerequisites, Industrial Engineering 51 and 79. 3 class hours. Credit, 3.

86. (II) Industrial Engineering Principles

Industrial engineering principles as applied to organization, plant location, plant layout, industrial costs, production control, production standards, incentives. For engineering students other than industrial engineering majors. Prerequisite, Junior standing. 3 class hours. Credit, 3.

88. (II) Motion and Time Study

The combined fields of motion study and time study. For junior and senior students outside the industrial engineering field. Prerequisite, Junior standing. 2 class hours, 1 3-hour laboratory period. Credit, 3.

96. (II) Professional Seminar

Presentation of papers on important subjects and recent development in the field of industrial engineering. Prerequisite, Senior standing. 1 class hour. Credit, 1.

ENGLISH

Acting Head of Department: PROFESSOR VERNON P. HELMING. PROFESSORS COPELAND, MUSGRAVE, O'DONNELL, VARLEY; ASSOCIATE PROFESSORS CLARK, KAPLAN, KOEHLER, LANE, LANGLAND, MITCHELL, WILLIAMS; ASSISTANT PROFESSORS BARRON, CHAMETZKY, COLLINS, DUCKERT, HAVEN, HOGAN, HARRIGAN, MCCARTHY, PAGE, RATNER, RUDIN, SILVER, WESTON; MRS. DUBOIS, MRS. GRAHAME, MRS. MICHELMAN, MRS. REID, MRS. ROWE, MRS. SMITH, MRS. WRIGHT, MESSRS. GOZZI, HICKS, LABRANCHE, MADEIRA, OLMSTED, SMITH, TUCKER, WOLF.

F. (I) (II) English for Foreign Students

Drill in English grammar and idiom; individual conferences on particular difficulties; introduction to contemporary American literature. Students having to meet the English 1, 2 requirement, who show proficiency in this course may, upon recommendation of the instructor, continue with English 2 on completion of this course. 2 class hours, 1 laboratory period. Credit, 0.

1. (I) (II) 2. (I) (II) English Composition

Training in effective exposition; analysis of college-level readings. 3 class hours. Credit, 3.

25. (I) (II) 26. (I) (II) Masterpieces of Western Literature

A study of selected masterpieces. The course aims to enrich the student's appreciation of literary values and develop his understanding of abiding human issues. 3 class hours. Credit, 3.

50. (I) (II) Technical Writing

For majors in engineering. A course in factual and inductive exposition with special emphasis upon process reports and theses. 2 class hours. Credit, 2.

51. (I) Advanced Expository Writing

Practice in writing informative and persuasive prose in the form of essays, reports, and news and feature articles. Primary emphasis on clarity and development of style. 3 class hours. Credit, 3.

52. (II) Advanced Technical Writing

Case studies in engineering and industrial reporting, advertising and promotional literature, scientific journalism, and graphic techniques. Given in alternate years. Prerequisite, a grade of A or B in English 50 or 51 or permission of the instructor. 3 class hours. Credit, 3.

ENGLISH

53. (I) (II) Creative Writing

Intensive practice in writing prose fiction, with some attention to other forms, supplemented by discussion of ideas and techniques in contemporary literature. Prerequisite, a grade of A or B in English 1 or 2, or permission of the instructor. 3 class hours. Credit, 3.

54. (I) (II) Creative Writing

A continuation of English 53, allowing choice of emphasis upon short stories, poetry, drama, or novel. Prerequisite, a grade of A or B in English 53, or permission of the instructor. 3 class hours. Credit, 3.

55. (I) Early American Literature

Significant American writing during the Colonial, Revolutionary, and early Federalist periods. Given in alternate years. 3 class hours. Credit, 3.

56. (II) American Poetry

American poetry from 1800 to the emergence of a modern style early in the twentieth century. 3 class hours. Credit, 3.

57. (I) Major American Writers

Selected major American writers of the nineteenth and twentieth centuries, including Emerson, Hawthorne, Longfellow, Lowell, James, Adams, Fitzgerald, and Hemingway. 3 class hours. Credit, 3.

58. (II) Major American Writers

Selected major American writers of the nineteenth and twentieth centuries, including Cooper, Poe, Melville, Thoreau, Whitman, Twain, Crane, Dreiser, Wolfe, and Faulkner. 3 class hours. Credit, 3.

60. (II) History of the English Language

The development of English, including a study of vocabulary and usage levels, grammars, and dictionaries. Special attention to matters crucial to the teaching of English in secondary schools. Given in alternate years. 3 class hours. Credit, 3.

61. (I) History of English Literature

A study of the major phases of English literary history. Representative writers from Chaucer to Dryden will be examined. 3 class hours. Credit, 3.

62. (II) History of English Literature

A study of representative English writers from the eighteenth century to the present. A continuation of English 61 but may be elected independently. 3 class hours. Credit, 3.

63. (I) Literary Criticism

An introduction to the history of literary criticism. Chief emphasis given to the major philosophical critics, from Plato and Aristotle to the nineteenth century. Given in alternate years. 3 class hours. Credit, 3.

64. (II) Literary Criticism

An examination and application of techniques of criticism, with special consideration of the twentieth century. Given in alternate years. 3 class hours. Credit, 3.

66. (II) Chaucer

The major works, especially *Troilus* and selected *Canterbury Tales*, as combinations of medieval art and thought with pre-Renaissance motifs and Chaucer's genius for realism. 3 class hours. Credit, 3.

67. (I) Shakespeare

The dramatic art of Shakespeare as revealed in a study of approximately twenty plays. 3 class hours. Credit, 3.

68. (II) Shakespeare

An intensive study of five plays, directed toward a scholarly appreciation of Shakespeare as a dramatic artist. May be elected independently of English 67. 3 class hours. Credit, 3.

69. (I) The Renaissance in England

The non-dramatic literature of Tudor and Jacobean England in terms of emergent forms and literary ideas. Special attention to More, Spenser, Bacon, and Thomas Browne. 3 class hours. Credit, 3.

70. (II) Elizabethan and Jacobean Dramatists

Non-Shakespearian dramatists of the English Renaissance. A study of the major plays of Marlowe, Jonson, Beaumont, Fletcher, Tourneur, Webster, and Ford. 3 class hours. Credit, 3.

72. (II) Greek Classics (in translation)

Homer, lyric poetry, the major dramatists, selected dialogues of Plato, Thucydides, and their relations to the classical tradition in English literature. 3 class hours. Credit, 3.

73. (I) Seventeenth-Century Poetry, 1600-1660

A study of such representative poets as Donne, Jonson, Herrick, Lovelace, Suckling, Herbert, Vaughan, Crashaw, Traherne, and Marvell, with emphasis upon the Metaphysical Tradition. Given in alternate years. 3 class hours. Credit, 3.

74. (II) Milton

Development of the mind and art of Milton as a figure of the English Reformation and the late Renaissance, with emphasis on *Paradise Lost*. 3 class hours. Credit, 3.

75. (I) English Literature of the Restoration

Intellectual, moral, and literary values of the Restoration period from 1660 to 1700. Emphasis on Dryden's satire, the Restoration theater, and Congreve's comedy of manners. Given in alternate years. 3 class hours. Credit, 3.

77. (I) English Literature of the Eighteenth Century

The literature of the Augustan Age, with special emphasis on the writings of Swift and Pope. 3 class hours. Credit, 3.

78. (II) English Literature of the Eighteenth Century

The literature of the later eighteenth century with special emphasis on the Johnson Circle. A continuation of English 77 but may be elected independently. 3 class hours. Credit, 3.

ENGLISH

79. (I) The Romantic Poets

A study of the Romantic Movement as revealed in the poetry and prose of Wordsworth, Coleridge, and the other early Romantics. Given in alternate years. 3 class hours. Credit, 3.

80. (II) The Romantic Poets

A further study of the Romantic Movement, with particular attention to Byron, Shelley, and Keats. Given in alternate years. 3 class hours. Credit, 3.

81. (I) English Prose of the Nineteenth Century

A study of the techniques and ideas of the chief prose writers, including Wordsworth, Coleridge, Lamb, Hazlitt, DeQuincey, Carlyle, and Ruskin. Given in alternate years. 3 class hours. Credit, 3.

82. (II) English Prose of the Nineteenth Century

The chief Victorian prose writers, including Macaulay, Newman, Arnold, Mill, Huxley, Pater, and Stevenson. A continuation of English 81 but may be elected independently. Given in alternate years. 3 class hours. Credit, 3.

83. (I) The Development of the English Novel

The reading and discussion of eight or nine great English novels from Defoe through the Victorians. 3 class hours. Credit, 3.

84. (II) Victorian Poetry

An exploration of the range and diversity of Victorian poetry, with special attention to Tennyson, Browning, Arnold, and the Pre-Raphaelite Movement. 3 class hours. Credit, 3.

85. (I) Modern European Drama (in translation)

Major modern dramatists beginning with Ibsen and including Chekhov, Pirandello, Strindberg, Giraudoux, Shaw, and others. Emphasis on comparative currents in various European nations. 3 class hours. Credit, 3.

87. (I) Modern Novel: 1890-1920

The expanding form of the novel and increasing interest in social causes as exhibited in some twelve novels. 3 class hours. Credit, 3.

88. (II) Modern Novel: 1920-1950

An analytical presentation of some twelve novels. A continuation of English 87 but may be elected independently; no English major may, however, elect both English 87 and 88. 3 class hours. Credit, 3.

89. (I) Modern Poetry

An analysis of twentieth-century poetry developing from such authors as Hardy, Hopkins, Whitman, and Emily Dickinson to those of the present. 3 class hours. Credit, 3.

90. (II) Modern British and American Drama

A study of representative dramatists since the late nineteenth century, including Shaw, Fry, O'Casey, O'Neill, Williams, and others. Emphasis on changing trends in twentieth-century dramatic art. 3 class hours. Credit, 3.

ENTOMOLOGY AND PLANT PATHOLOGY

95. (I) Seminar in English Literature or Comparative Literature in Translation

For English majors, but open to others by permission of the instructor. 3 class hours. Credit, 3.

96. (II) Seminar in American Literature

For majors but open to others by permission of the instructor. 3 class hours. Credit, 3.

ENTOMOLOGY AND PLANT PATHOLOGY

Head of Department: PROFESSOR J. H. LILLY. PROFESSORS SHAW, SWEETMAN, WHEELER; ASSOCIATE PROFESSORS HANSON, KING; ASSISTANT PROFESSORS BANFIELD, SMITH, ROHDE.

26. (I) (II) General Entomology

A brief survey of the entire field of entomology: structure, development, classification, biology, and control of insects. Formation of an insect collection. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Lilly, Miss Smith.

53. (I) Principles of Agricultural Entomology

The more important insect pests, including their identification, life histories, damages and methods of control. The general principles of pest control receive special attention. Prerequisite, Entomology 26. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Wheeler.

55. (I) 56. (II) Classification of Insects

The identification of insects, including immature stages. First semester: Orthoptera, Hemiptera, Coleoptera; second semester: other orders. Either semester may be elected independently. Prerequisites, Entomology 26; Entomology 57 recommended. 3 2-hour laboratory periods. Credit, 3. Miss Smith.

57. (I) Insect Morphology

The external and internal anatomy of the major orders, with stress on phylogenetic relationships, as background for subsequent work in taxonomy and physiology. Prerequisite, Entomology 26. 1 class hour, 3 2-hour laboratory periods. Credit, 4. Mr. Hanson.

60. (II) Structural Pest Control

Identification, biology and specific control measures of arthropod and rodent pests in structures, foods, fabrics, and miscellaneous products during transportation and in homes. Prerequisites, Zoology 1; Entomology 26 desirable. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Sweetman.

72. (II) Forest and Shade Tree Insects

The principles and methods of controlling insects which attack trees and forest products. A study of important species, their identification, biology, and specific control measures. Prerequisites, Entomology 26; 53, 55, 56, and 57 desirable. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Shaw.

74. (II) Medical and Veterinary Entomology

Relationships of insects and their allies to the health of man and animals. The classification, biology and control of these pests. Prerequisite, Entomology 26. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Shaw.

ENTOMOLOGY AND PLANT PATHOLOGY

79. (I) Animal Ecology

Relations of animals to their physical and biotic environment, with observations and quantitative measurement of these factors and responses in the field and laboratory. Prerequisites, Entomology 26 or Zoology 1. 2 class hours, 1 2-hour laboratory periods. Credit, 3. Mr. Sweetman.

80. (II) Insect Control

The science of pest control: chemical, biological, ecological, mechanical and legislative. The need, application, economics, effectiveness and hazards from insecticides and biological control are emphasized. Prerequisites, Entomology 53, 55, 57 or equivalent; 79 and 81 desirable. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Sweetman.

81. (I) Insect Physiology

Detailed consideration is given to the organ systems, showing the functions such as nutrition, respiration, and growth, and the relationship of physiology to behavior. Prerequisites, Entomology 26; 55, 56, and 57 desirable. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Sweetman.

83. (I) Arthropods Other Than Insects

Arthropods are studied from the phylogenetic standpoint, with special reference to their relationship to the origin and evolution of insects. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Hanson.

89. (I) Entomology Techniques

Theory and practice in the preservation, preparation, and mounting of insects for study and display. Excess graduation credits are necessary for election. Prerequisites, Entomology 26 and permission of instructor. 2 2-hour laboratory periods. Credit, 2. Miss Smith.

90. (I) (II) Evolution

The course and dynamics of both inorganic and organic evolution are treated, as are the implications of evolutionary concept on human philosophy, behavior and welfare. 3 class hours. Credit, 3. Mr. Hanson.

97. (I) 98. (II) Special Problems in Entomology

Supervised problem work in entomology or beekeeping for qualified students. Prerequisites, Entomology 26 and permission of staff. Credit 1-3. The Staff.

APICULTURE

66. (II) Beekeeping

Honeybees and their relatives, structure and biology of bees, methods of management, diseases, pollination, queen rearing, honey production, and history of beekeeping are included. Prerequisite, Entomology 26 or Zoology 1. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Shaw.

85. (I) Advanced Beekeeping

Provides detailed knowledge of bees and their management, including processing, grading and packaging honey. Beeswax, diseases, poisoning, pollination, behavior and current problems are considered. Prerequisite, Entomology 66. 1 class hour, 1 2-hour laboratory period. Credit, 2. Mr. Shaw.

ENTOMOLOGY AND PLANT PATHOLOGY

ARBORICULTURE

51. (I) Principles of Arboriculture

Maintenance of shade and ornamental trees and selection of desirable tree species. Development of municipal and private shade tree programs. Student Insurance Policy mandatory. Prerequisite, a year of biological science. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. King.

PLANT PATHOLOGY

51. (I) General Plant Pathology

A basic course in plant pathology dealing with the nature, cause and control of plant diseases; epidemiology, diagnosis and control receive special attention. Prerequisite, a course in Botany. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Banfield.

52. (II) General Plant Pathology

An extension of Course 51 in which representative disease problems are studied in greater detail. Student may select problems related to his major field. Prerequisite, Plant Pathology 51. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Banfield.

69. (I) Forest and Shade Tree Pathology

The nature, cause and control of the principal types of disease in trees, including decay of forest products, and of standing and structural timbers. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Banfield.

75. (I) Methods in Plant Pathology

The general techniques and specialized methods used in the investigation of plant diseases, including isolation, culture and pathogenicity studies of representative plant pathogens. Prerequisite, Plant Pathology 51. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Banfield.

78. (II) Nematology

Anatomy, morphology and classification of plant-parasitic and other soil-inhabiting nematodes. Parasitic relationships with plants and current control measures will be stressed. Prerequisite, a year of biological science. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Rohde.

90. (II) Insect Transmission of Plant Diseases

The interrelationships between insects, plants, microorganisms and environment are considered in relation to the development of plant diseases, emphasizing various roles played by arthropods. Prerequisite, a year of biological science. 3 class hours. Credit, 3. Mr. Banfield.

97. (I) 98. (II) Special Problems in Plant Pathology

Supervised problem work in plant pathology, including nematology, for qualified students. Prerequisites, Plant Pathology 51 and permission of staff. Credit, 1-3. The Staff.

FOOD TECHNOLOGY

FOOD TECHNOLOGY

Head of Department: PROFESSOR WILLIAM B. ESSELEN. PROFESSORS FAGERSON, LEVINE; ASSOCIATE PROFESSORS FRANCIS, HAYES; ASSISTANT PROFESSORS COURNOYER, EL-BISI, HULTIN, LUKOWSKI, NAWAR, SAWYER; MR. HUNTING.

51. (I) Introductory Food Technology

A basic course, primarily for food technology majors, covering food manufacture, processing, distribution and spoilage problems. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Hultin.

52. (II) Food Products

The composition of food products. Changes that occur in the chemistry of foods during storage and processing. Enzymes in the food industry. Prerequisite, Food Technology 51. 2 class hours, 1 4-hour laboratory period alternate weeks. Credit, 3. Mr. Hultin.

61. (I) Industrial Technology

A survey of commercial practices in the manufacture and preservation of food products. Prerequisites, Food Technology 52; Agric. Eng. 81. 1 class hour, 1 4-hour laboratory period. Credit, 3. Mr. Levine.

62. (II) Industrial Technology

A continuation of Course 61. Plant visits are made including a two-day field trip to food plants in the Boston area. Prerequisite, Food Technology 61. 1 class hour, 1 4-hour laboratory period. Credit, 3. Mr. Levine.

75. (I) and (II) Food Preservation

For students not majoring in food technology. The important food products, with emphasis on raw materials used, processing methods and examination of packaged foods. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Hultin.

91. (I) Analysis of Food Products

Physical, chemical, microbiological and microscopical methods will be employed. Prerequisites, Food Technology 52; Bacteriology 31; Chemistry 30. 2 class hours, 1 4-hour laboratory period. Credit, 3. Mr. Hunting.

92. (II) Objective Analytical Methods and Instrumentation

A continuation of Course 91. Prerequisite, Food Technology 91. 2 class hours, 1 4-hour laboratory period. Credit, 3. Mr. Hunting.

94. (II) Sensory Evaluation Methods

An introduction to sensory measurements in the evaluation and acceptance of foods. Panel tests and their statistical interpretation; taste, odor, color, and texture measurements. For seniors only. 1 class hour, 1 2-hour laboratory period. Credit, 2. Mr. Sawyer.

95. (I) 96. (II) Food Science Literature

For seniors who specialize in food technology. 2 class hours. Credit, 2. Staff.

FOOD MANAGEMENT

33. (I) Introductory Food Management

An introductory course in restaurant and hotel operations. 3 class hours. Credit, 3. Staff.

FORESTRY AND WILDLIFE MANAGEMENT

77. (I) Food Service Practices

Functional study of personnel. Advertising and Promotion Methods. Labor procurement and policies. Job training and evaluation. Cost controls. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Cournoyer.

78. (II) Stewarding

A study of practices used by the food service industry pertaining to purchasing, receiving, and issuing food, beverages, and other supplies. Principles of food and beverage cost control. 3 class hours. Credit, 3. Staff.

81. (I) Hotel Practice

Elements of hotel management. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Cournoyer.

82. (II) Laws of Innkeeping (Institution Law)

Law as applied to hotels and food service establishments; includes a consideration of bailments, torts, regulations, insurance, and sanitation. Prerequisite, General Business 71. 3 class hours. Credit, 3. Mr. Cournoyer.

95. (I) 96. (II) Food Management Seminar

Survey of current food service literature and reports. Outside speakers on selected professional topics. 2 class hours. Credit, 2. Staff.

FORESTRY AND WILDLIFE MANAGEMENT

Head of Department: PROFESSOR ARNOLD D. RHODES. ASSOCIATE PROFESSORS GATSLICK, GREELEY, MACCONNELL; ASSISTANT PROFESSORS ABBOTT, MADER; MESSRS. BOND, MAWSON.

25. (I) Wood Anatomy and Identification

A basic anatomical study of wood elements, their various structural characteristics and functions; practice in identification. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Gatslick.

26. (II) Dendrology

The taxonomic features, silvical characteristics, and distribution of the principal tree species of temperate North America; a description of the forests where they occur. Prerequisite, Botany 1. 2 class hours, 2 2-hour laboratory periods. Credit, 3. Mr. Rhodes, Mr. Abbott.

52. (II) Properties of Wood

The physical and chemical characteristics of woods in relation to its use; the influence of growth upon wood properties; methods of testing. 3 class hours. Credit, 3. Mr. Gatslick.

53. (I) Silvics

Forest ecology as a foundation for silviculture; environmental factors and their effect upon vegetation; development and classification of trees and forest communities; forest influences. 2 class hours, 1 4-hour laboratory period. Credit, 3. Mr. Mader.

54. (II) Forest Soils

Effects of soil properties on tree growth; relationship of soils to silviculture, harvesting, watersheds, wildlife, and range management; forest soil description, classification and mapping. Prerequisite, Agronomy 22. 2 class hours, 1 4-hour laboratory period. Credit, 3. Mr. Mader.

FORESTRY AND WILDLIFE MANAGEMENT

55. (I) (1961-62) and (Summer) The Elements of Forest Mensuration

The measurement of trees, stands, and forest products; field and office practice in timber estimating and log scaling; collection and compilation of forest inventory data. 2 class hours, 1 4-hour laboratory period. Credit, 3. Summer course, 3 44-hour weeks. Mr. Mawson, Mr. MacConnell.

56. (II) The Principles of Silviculture

Establishment and culture of forests for the production of wood crops; regeneration and intermediate cuttings, chemical silvicides, prescribed burning, site treatment, slash disposal. Prerequisite, Forestry 53 recommended. 2 class hours, 1 4-hour laboratory period. Credit, 3. Mr. Rhodes.

57. (I) Forest Economics and Policy

Development of land use and legislation affecting forest policy in the U. S. Timber resources distribution, consumption and demand, taxation, credit, and social-economic factors. 3 class hours. Credit, 3. Mr. Bond.

59. (I) Forest Protection

Principles of protecting forests from fire, insects, diseases, domestic animals, wildlife, and atmospheric agencies with special emphasis on the prevention and control of forest fires. 3 class hours. Credit, 3. Mr. Abbott.

71. (I) Aerial Photogrammetry

Principles of photogrammetry in forest management, wildlife biology, and other fields concerned with large land surfaces. Photographic interpretation and map making from aerial photographs. 2 class hours, 1 4-hour laboratory period. Credit, 3. Mr. MacConnell.

74. (II) Lumber Manufacture and Distribution

The lumber industry; milling and processing, log and lumber grading, lumber storage and distribution. 3 class hours. Credit, 3. Mr. Bond.

75. (I) Forest Products

A survey of the principal forest products, their manufacture and distribution. 3 class hours. Credit, 3. Mr. Gatslick.

78. (Summer) Harvesting of Forest Products

Basic concepts of harvesting methods with emphasis on supervision. Field exercises in harvesting techniques followed by a week's trip visiting industrial forest operations. 3 44-hour weeks. Credit, 3. Mr. Bond, Mr. MacConnell.

80. (II) Principles of Forest Management

Multiple-use management of forest land, organization of the forest for sustained-yield management. Preparation of a management plan for a 10,000-acre forest. Prerequisite for the laboratory, Forestry 55. 3 class hours, 1 4-hour laboratory period. Laboratory period optional for non-forestry majors. Credit, 5 or 3. Mr. MacConnell.

81. (I) Regional Silviculture

The application of silvicultural practices to the forests of the United States and Canada; the ecological and economic factors affecting management. Prerequisite, Forestry 56. 3 class hours. Credit, 3. Mr. Rhodes.

FORESTRY AND WILDLIFE MANAGEMENT

82. (II) Artificial Propagation of Forests, and Forest Tree Improvement

Reproductive characteristics of trees; artificial propagation of forest stands by direct seeding and planting; nursery management; and forest tree improvement through provenance tests, selection and hybridization. 2 class hours, 1 4-hour laboratory period. Credit, 3. Mr. Abbott.

84. (II) Advanced Forest Mensuration

The analysis of growth and yield in forest stands; construction of standard volume tables and yield tables; plotless cruising and continuous forest inventory. Prerequisite, Forestry 55. 2 class hours, 1 4-hour laboratory period. Credit, 3. Mr. Mawson.

85. (I) Wood Seasoning and Preservation

Properties of wood in relation to drying and preservation; theory and practice of air seasoning, kiln drying, and preservative treatment. 3 class hours. Credit, 3. Mr. Gatslick.

97. (1) 98. (II) Selected Problems

Individual work on an assigned problem or project in forest management or wood utilization. For qualified juniors and seniors. Total credits for two semesters not to exceed six. Credit, 2-4. The Staff.

WILDLIFE MANAGEMENT

27. (I) Conservation of Natural Resources

Natural resources of the United States including soil, water, forests, wildlife, and the important minerals; conservation problems in relation to national prosperity. 3 class hours. Credit, 3. Mr. Greeley.

70. (II) Principles of Wildlife Management

Life histories, ecology, and management of common game birds and mammals, including a study of natural habitats and methods of management. 1 class hours, 2 2-hour laboratory periods. Credit, 3. Mr. Greeley.

71. (I) Waterfowl Biology and Management (1960-61)

Life histories, ecology, and management of waterfowl, including a study of natural habitats and methods of management. Given in alternate years. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Greeley.

72. (II) Forest-Animal Relationships

For students majoring in Forestry. The influence of animals on the forest; economic aspects of forest-animal relationships. 3 class hours. Credit, 3. Mr. Greeley.

74. (II) Techniques in Wildlife Management (1960-61)

Field studies of wild animals of forest and farm; cover mapping, habitat studies, census and food habits. Given in alternate years. Admission by permission of instructor. 1 class hour, 1 4-hour laboratory period. Credit, 3. Mr. Greeley.

GEOLOGY

75. (I) Furbearer Biology and Management (1961-62)

Life histories, ecology, and management of the furbearers, including a study of natural habitats, management and fur farm problems. Given in alternate years. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Greeley.

96. (II) Seminar (1961-62)

Study and discussion of wildlife problems in relation to agriculture and forestry. For juniors and seniors majoring in wildlife management. Given in alternate years. 3 class hours. Credit, 3. Mr. Greeley.

GEOLOGY

Head of Department: PROFESSOR H. T. U. SMITH. ASSOCIATE PROFESSOR FARQUHAR;
ASSISTANT PROFESSORS JOHANSSON, MCGILL, NELSON, WEBB; MESSRS. DODGE*,
RICE.

1. (I) (II) Physical Geology

The nature and origin of the earth's landscape features, rocks, and structures, including the work of earthquakes, volcanoes, mountain building, rivers, waves and currents, and glaciers. 2 class hours, 1 3-hour laboratory period and field trips. Credit, 3.

2. (I) (II) Historical Geology

Origin and age of the earth; interpretation of the geologic time scale; development of continents and oceanic basins and their relief features; evolution of life. Prerequisite, Geology 1. 2 class hours, 1 3-hour laboratory period and field trips. Credit, 3.

33. (I) Structural Geology

Principles of deformation of the earth's crust; occurrence and recognition of rock structures; graphic solution of structural problems; field observations. Prerequisite, Geology 1. 1 class hour, 2 2-hour laboratory periods and field trips. Credit, 3. Mr. Farquhar.

42. (II) Mineralogy

Chemical composition, physical properties, crystal form, occurrence, and identification of common minerals. Prerequisites, Chemistry 1 and 2. 2 class hours, 2 2-hour laboratory periods. Credit, 4. Mr. Nelson.

50. (I) Engineering Geology

Not open to geology majors. Materials and surface features of the earth with emphasis on engineering problems; map reading as related to the phenomena of physical geology. 2 class hours, 1 3-hour laboratory period or field trip. Credit, 3. Mr. Farquhar.

56. (I) Lithology

Study of the classes of rocks with reference to manner of origin, modes of occurrence, structural features and chemical and petrographic distinction within each group. Prerequisites, Geology 1, 42. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Nelson.

* On leave of absence.

63. (I) Invertebrate Paleontology

A study of the history, development and identification of invertebrate animal fossils. Field trips by arrangement. Prerequisites, Geology 2; Zoology 1. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Johansson.

64. (II) Plant Paleontology

A study of the history, development, and identification of plant fossils. Field trips by arrangement. Not offered 1961-62. 1 class hour, 2 2-hour laboratory periods. Credit, 3.

72. (II) Geologic Field Mapping

An introduction to the instruments and techniques used in field mapping, and their application to the geologic mapping of selected areas. Prerequisites, Geology 33, 56. 8 field hours. Credit, 3. Mr. Farquhar, Mr. McGill.

74. (I) Sedimentology

A study of the composition, classification, and origin of sedimentary rocks, including discussion of source area, mode of transportation and deposition, and diagenesis. Prerequisites, Geology 1, 2, 42. 2 class hours and laboratory period. Credit, 2. Mr. Webb.

78. (II) Principles of Stratigraphy

The principles of stratigraphic correlation and their application to the problems of the major rock units primarily of the eastern United States. Prerequisites, Geology 1, 2. Course 33 recommended. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Webb.

89. (I) Geomorphology

Origin and development of landforms in relation to geological processes, climatic environment, and tectonic history. Application of geomorphic methods to interpretation of Cenozoic geologic history. Prerequisites, Geology 1, 2, 33. 2 class hours, 1 2-hour laboratory period. Credit, 3.

91. (II) Photogeology

A laboratory study of the instruments and methods employed in making measurements and preparing base maps and geologic maps from vertical and oblique aerial photos. Prerequisites, Geology 33, 72. 2 2-hour periods. Credit, 3. Mr. Smith.

94. (II) Pleistocene Geology

Geochronology of Pleistocene time as related to climatic changes and their influence on glaciology, landforms, sedimentary deposits, sea level, and the paleontological record. Prerequisite, Geology 2 or permission of the instructor. Course 89 recommended. 2 class hours; field trips by arrangement. Credit, 3. Mr. Smith.

97. (I) 98. (II) Special Problems

For seniors specializing in geology. Total credit may not exceed 6. Prerequisite, 21 hours of geology or permission of department. Credit, 1-6. The Department.

GERMAN

GEOGRAPHY

50. (II) Geography of North America

The physical geography of the continent, its development by man, and the marked regionalization which has resulted. 3 class hours. Credit, 3.

55. (I) Economic Geography

The distribution, production, and utilization of the natural resources and commodities on which man's livelihood depends and the problems which they pose. 3 class hours. Credit, 3.

60. (II) Principles of Physical Geography

A systematic study of the world's physiographic provinces, climate, vegetation, soils, mineral resources, and their effects upon mankind. The geographic relationships to land forms. Not available for major credit in geology. 3 class hours. Credit, 3. Mr. Johansson.

81. (I) (II) World Political Geography

The human and physical environments in which states exist and the problems which these environments pose in their current and likely future behavior. 3 class hours. Credit, 3. Mr. Burke.

GERMAN AND RUSSIAN

Head of Department: PROFESSOR FREDERICK C. ELLERT. PROFESSOR HELLER; ASSISTANT PROFESSORS FRINK, HAUSER; MISS SCHIFFER, MESSRS. ANDERLE, LEA, STAWIECKI, WITTMANN.

1. (I) 2. (II) Elementary German

Conversation, reading, grammar, and composition. No credits in this course may be applied toward a degree until the close of the second semester, except upon special recommendation from the Provost. 3 class hours, 1 laboratory hour. Credit, 3.

25. (I) 26. (II) Intermediate German

Reading, conversation, composition. Grammar review. Prerequisites, German 1 and 2. 3 class hours, 1 laboratory hour. Credit, 3.

51. (I) Nineteenth Century Prose (1962-63)

The *Novelle* from early realism to naturalism. Emphasis on literary and social forces in Tieck, Stifter, Keller, Storm, C. F. Meyer. Given in alternate years. Prerequisites, German 25 and 26. 3 class hours. Credit, 3. Mr. Anderle.

52. (II) Poetry and Drama of the Nineteenth Century (1962-63)

Plays of Kleist, Grillparzer, Hebbel, Hauptmann. The poetry of Mörike, Lenau, Droste-Hülthoff, Nietzsche. Given in alternate years. Prerequisites, German 25 and 26. 3 class hours. Credit, 3. Mr. Hauser.

53. (I) Twentieth Century Prose (1961-62)

Main literary currents from Nietzsche to Hesse. Particular attention to the works of Thomas Mann, Kafka, and Werfel. Given in alternate years. Prerequisites, German 25 and 26. 3 class hours. Credit, 3. Mr. Heller.

RUSSIAN

54. (II) Poetry and Drama of the Twentieth Century (1961-62)

Poetry of Hofmannsthal, George and Rilke. Plays of Hauptmann, Kaiser, Brecht and others. Given in alternate years. Prerequisites, German 25 and 26. 3 class hours. Credit, 3. Mr. Lea.

55. (I) Storm and Stress

Eighteenth century Titanism in German literature centering in the early Goethe. Prerequisites, German 25 and 26. 3 class hours. Credit, 3. Mr. Ellert.

56. (II) Romanticism

Poetry and prose of the romantic period from Hölderlin to Heine. Given in alternate years. Prerequisites, German 25 and 26. 3 class hours. Credit, 3. Mr. Ellert.

57. (I) Goethe's *Faust*

Prerequisites, German 25 and 26. 3 class hours. Credit, 3. Mr. Heller.

59. (I) The Germanic Languages

Introduction to general and Germanic philology. Historical development particularly of German and English and their relationship to other languages of the Indo-European family. Given in alternate years. 3 class hours. Credit, 3.

60. (II) The Classical Period

Representative works of Lessing, Goethe, and Schiller. Given in alternate years. Prerequisites, German 25, 26. 3 class hours. Credit, 3. Mr. Heller.

67. (I) German Masterpieces in Translation

Literary works ranging from the Middle Ages to the present. Admission by permission of department. 3 class hours. Credit, 3.

70. (II) Scientific German

Expository prose. Prerequisites, German 25, 26, or equivalent. 3 class hours. Credit, 3. Mr. Stawiecki.

77. (I) Survey of German Literature I

German literature from the Middle Ages to the Age of Enlightenment. Prerequisites, German 25, 26 or equivalent. 3 class hours. Credit, 3.

78. (II) Survey of German Literature II

German literature from 1770 to the present. Prerequisites, German 25, 26 or equivalent. 3 class hours. Credit, 3.

79. (I) 80. (II) German Conversation and Composition

Practice in the oral and written language. Prerequisites, German 25 and 26, or permission of instructor. 4 class hours. Credit, 3. Miss Schiffer.

RUSSIAN

1. (I) 2. (II) Elementary Russian

Grammar, exercises in composition and conversation, selected readings. No degree credit granted until the completion of Russian 2 except upon special approval by the Provost. Prerequisite, previous language training. 3 class hours, 1 laboratory hour. Credit, 3. Mr. Frink.

GOVERNMENT

5. (I) 6. (II) Intermediate Russian

A review of the fundamentals of grammar followed by more advanced study of grammatical structure and idiom. Composition, conversation, and readings in Russian fiction. Prerequisites, Russian 1, 2. 3 class hours, 1 laboratory hour. Credit, 3. Mr. Frink.

55. (I) Masterpieces of Russian Literature in Translation

A representative selection will be made from the classics of Russian romanticism and realism, culminating in the novels of Dostoevsky and Tolstoy. Students majoring in Russian will be required to read some of the texts in Russian. Prerequisite, junior standing. 3 class hours. Credit, 3.

GOVERNMENT

Head of Department: PROFESSOR JOHN S. HARRIS. PROFESSORS BETH, FENTON; ASSOCIATE PROFESSORS CURTIS, GOODWIN; ASSISTANT PROFESSORS ALLEN, BRAUNTHAL, MAINZER, TINDER; MR. DOWD.

25. (I) (II) American Government

A study of the principles, machinery, dynamics, and problems of government in the United States. 3 class hours. Credit, 3.

26. (II) European Government

A survey of the politics and governmental institutions of Great Britain, France, U.S.S.R., and other European countries. 3 class hours. Credit, 3.

51. (I) Municipal Government

A survey of the governmental structure and function of American municipalities. 3 class hours. Credit, 3. Mr. Goodwin, Mr. O'Hare.

52. (II) American Foreign Policy

An analysis of the principles of American foreign policy. Constitutional, political, and administrative considerations which influence the formulation and execution of American foreign policy. 3 class hours. Credit, 3. Mr. Allen, Mr. Braunthal.

53. (I) International Relations

The nation-state system and conceptions of national interest in modern world politics. Forms and distribution of power. Making of foreign policy and adjusting international conflict. 3 class hours. Credit, 3. Mr. Allen.

54. (II) State Government (1961-62)

A study of state politics, organization and functions, with emphasis on the role of the state in our Federal system. Given in alternate years. 3 class hours. Credit, 3. Mr. Goodwin, Mr. Fenton.

55. (Summer) The Presidency in American Government

Constitutional and political aspects of the presidency in legislation, administration and conduct of foreign and military affairs. The president as party leader. Prerequisite, Government 25. Credit, 3. Messrs. Braunthal, Goodwin, Fenton.

56. (II) The Legislative Process

The functions of national and state legislatures, legislative procedures, and the role played by political parties and pressure groups in the legislative process. 3 class hours. Credit, 3. Mr. Goodwin, Mr. Fenton.

57. (I) The Government and Politics of Russia

Organization and functioning of the Communist party; the administrative process; terror as a system of power; Soviet foreign policy, its formation and execution. 3 class hours. Credit, 3. Mr. Harris.

61. (I) Public Administration

A study of organization and management in modern government, with emphasis on the bureaucracy's role in public policy formation. 3 class hours. Credit, 3. Mr. Mainzer, Mr. Harris.

62. (II) Administrative Law

A study of governmental activities in the regulation of industry, agriculture, and labor, with emphasis on the legal framework within which these activities operate. 3 class hours. Credit, 3. Mr. Mainzer.

63. (I) Political Parties and Elections

A study of the American political process, with emphasis on parties, pressure groups, and public opinion. 3 class hours. Credit, 3. Mr. Fenton, Mr. Goodwin.

64. (II) The Law and Practice of Civil Liberties

Development in American Constitutional Law of the concept of civil liberty, including free speech and religion, fair trial, and race discrimination. Prerequisite, Government 25. 3 class hours. Credit, 3. Mr. Beth.

65. (I) Constitutional Law

An historical study of the United States Constitution as interpreted by decisions of the Supreme Court. 3 class hours. Credit, 3. Mr. Beth.

66. (II) American Political Thought

A study of the development of American political thought from colonial times to the present. 3 class hours. Credit, 3. Mr. Harris.

68. (II) International Law (1961-62)

A study of the origin, character, and function of international law. Given in alternate years. 3 class hours. Credit, 3. Mr. Braunthal.

70. (II) International Organization (1960-61)

A study of international organization in the twentieth century, with emphasis upon the United Nations and regional organizations. Given in alternate years. 3 class hours. Credit, 3. Mr. Braunthal.

GOVERNMENT

71. (I) Ancient and Medieval Political Thought

A study of the development of political thought and its relation to cultural and institutional growth from the time of the Greeks to the end of the Middle Ages. 3 class hours. Credit, 3. Mr. Tinder.

72. (II) Modern Political Thought

A study of the development of political thought and its relation to cultural and institutional growth from the rise of the modern state to the present. 3 class hours. Credit, 3. Mr. Tinder.

76. (II) Public Opinion in Politics

A study of opinion and communication as aspects of the political process with emphasis upon communication through mass media. 3 class hours. Credit, 3. Mr. Mainzer.

78. (II) Municipal Administration (1960-61)

Administrative management in American municipalities based on descriptive literature, case materials, and personal observation, with particular attention to Massachusetts cities and towns. Given in alternative years. 3 class hours. Credit, 3. Mr. O'Hare.

80. (II) Municipal Law (1961-62)

A study of the legal problems encountered in the creation and operation of local government, with special reference to Massachusetts cities, towns, and counties. Given in alternate years. 3 class hours. Credit, 3. Mr. O'Hare.

83. (I) Public Personnel Administration

Theory, practice, and organization of the personnel functions in governmental administration, including recruitment, testing, classification, compensation, promotions, training, and employee relations. Prerequisites, Government 25, 61, or permission of instructor. 3 class hours. Credit, 3. Mr. Mainzer.

84. (II) Governmental Financial Administration

Theory, practice, and organization, including budgeting, revenues, debt operations, records administration, purchasing, audits, and financial reporting. Prerequisites, Government 25, 61, or permission of instructor. 3 class hours. Credit, 3. Mr. Harris, Mr. O'Hare.

91. (I) Scope and Methods of Political Science

Critical examination of the scope and unity of political science and the significant methodological positions and research techniques. Prerequisite, Government 25. 3 class hours. Credit, 3. Mr. Mainzer.

93. (I) (II) The Practice of American Politics

A course in practical American politics, given by a prominent political leader under the University Distinguished Professorship in Public Affairs. Prerequisite, Government 25. Credit, 3.

95. (I) 96. (II) Seminar

A study of special problems in the field of government. 3 class hours. Credit, 3.

HISTORY

Head of Department: PROFESSOR HAROLD W. CARY. PROFESSORS CALDWELL, QUINT; ASSOCIATE PROFESSORS DAVIS, GORDON, POTASH, WILLIAMS; ASSISTANT PROFESSORS BROWN*, CODY, GAGNON*, GREENBAUM, ILARDI, VAN STEENBERG; VISITING ASSISTANT PROFESSOR THOMPSON; MRS. GORDON, MESSRS. DE PILLIS, EDMONDSON, HEADLEY, WEBSTER, WICKWIRE, WOEHRLIN.

5. (I) 6. (II) **Modern European Civilization**

The historical development of the western European countries, their ideas and institutions. Either semester may be elected independently. 3 class hours. Credit, 3.

25. (I) 26. (II) **The Development of American Civilization**

A survey of the American national growth. Either semester may be elected independently. 3 class hours. Credit, 3.

31. (I) 32. (II) **English History**

Emphasis on economic, social, and cultural influences, as well as on constitutional development. Either semester may be elected independently. 3 class hours. Credit, 3. Mr. Caldwell, Mr. Wickwire.

51. (I) **Ancient History**

The development of civilization in the Ancient World. 3 class hours. Credit, 3. Mr. Williams.

53. (I) 54. (II) **History of Far Eastern Civilization**

A general historical introduction to the civilization and contemporary problems of the Far East. Either semester may be elected independently. 3 class hours. Credit, 3. Mr. Cody.

55. (I) 56. (II) **A History of Russia**

A survey of the political, economic, social and intellectual development of Russia. The first semester will treat the Tsarist era, the second, the origins of Russian Marxism and the Soviet period. Either semester may be elected independently. Prerequisites, History 5, 6. 3 class hours. Credit, 3. Mr. Woehrlin.

57. (I) **Colonial Hispanic America**

The age of the "conquistadores" to the independence movement. Emphasis on political, economic and social factors and the growth of institutions. 3 class hours. Credit, 3. Mr. Potash.

58. (II) **Modern Hispanic America**

The nineteenth and twentieth centuries with emphasis on Argentina, Brazil and Mexico. 3 class hours. Credit, 3. Mr. Potash.

62. (II) **Medieval History**

European history from the collapse of Rome to the Renaissance. 3 class hours. Credit, 3. Mr. Williams.

* On leave of absence.

HISTORY

63. (I) 64. (II) History of American Thought and Culture

The basic strands of American thought and their reflection in American culture. First semester deals with the period before 1865. Either semester may be elected independently. 3 class hours. Credit, 3. Mr. Brown.

66. (II) The History of Modern Germany

The evolution and development of Germany since the accession of Frederick the Great with emphasis upon diplomatic, political, military and social-economic trends and problems. 3 class hours. Credit, 3. Mr. Gordon.

69. (I) Europe, 1870-1918

Internal developments of the principal countries; a detailed study of conditions and diplomacy which led to the World War; and military and diplomatic history of the war years. Prerequisite, History 6. 3 class hours. Credit, 3. Mr. van Steenberg.

70. (II) Europe since 1918

Major developments in the internal and international affairs of the European states since World War I. 3 class hours. Credit, 3. Mr. Caldwell.

72. (II) History of American Westward Expansion, 1763-1893

Advance of settlement from the Appalachians to the Pacific and the influence of the frontier upon social, economic, and political conditions. Prerequisite, History 25, or permission of instructor. 3 class hours. Credit, 3. Mr. Davis.

73. (I) 74. (II) The Age of the Renaissance and Reformation, 1300-1600

A study of the changes in European thought and institutions during the development of Humanism and the Protestant and Catholic Reformations. Either semester may be elected independently. 3 class hours. Credit, 3. Mr. Ilardi.

75. (I) Europe in the Enlightenment, 1685-1789

Civilization of Western Europe in the eighteenth century, its social milieu, intellectual setting, institutional forces, religious tendencies, aesthetic contributions, and the growth of revolutionary spirit. 3 class hours. Credit, 3. Mr. Greenbaum.

77. (I) Modern Britain

A study of selected topics on the political, social, and intellectual development of Britain in the nineteenth and twentieth centuries. 3 class hours. Credit, 3. Mr. Caldwell.

78. (II) France Since 1789

A study of selected, formative political crises from 1789 to the present, and their settings in the economic, social, and intellectual life of modern France. 3 class hours. Credit, 3. Mr. Gagnon.

79. (Summer) New England to 1860

A study of the colonial and early national periods, with emphasis on the political, social, and economic aspects of life in this region. Credit, 3. Mr. Cary.

HOME ECONOMICS

81. (I) 82. (II) Diplomatic History of the United States

The development of American foreign relations, 1776 to the present. Either semester may be elected independently. Prerequisites, History 25, 26, or permission of the instructor. 3 class hours. Credit, 3. Mr. Cary.

83. (I) The Progressive Age (1900-1920)

A study of the political response to the changing economic and social conditions in American life. 3 class hours. Credit, 3. Mr. Quint.

84. (II) Conservatism and Reform (1920-1945)

American political, economic and intellectual life between the two World Wars. 3 class hours. Credit, 3. Mr. Quint.

90. (I) (II) Historiography and Historical Method

Training in location, appraisal, and handling of source materials. Critical evaluation of technique and ideas of representative historians from Thucydides to Toynbee. 3 class hours. Credit, 3. Mr. Greenbaum, Mr. Gagnon.

95. (I) (II) Seminar in European History

A problems course intended to give training in historical research and writing. The field of study will vary from semester to semester. Prerequisites, History 5, 6. 3 class hours. Credit, 3.

96. (I) (II) Seminar in American History

Similar to History 95, but dealing with fields of American history. Prerequisites, History 25, 26. 3 class hours. Credit, 3.

HOME ECONOMICS

ACTING DEAN: ASSOCIATE PROFESSOR OREANA A. MERRIAM. ASSOCIATE PROFESSORS BRIGGS, COOK, DAVIS; ASSISTANT PROFESSORS McCULLOUGH, HAWES; MRS. BOICOURT, MRS. JARVESOO, MRS. SULLIVAN, MISS WEAVER.

3. (I) Nutrition

The fundamental principles of nutrition and their application to individual and family food habits. 3 class hours. Credit, 3. Miss Mitchell.

4. (II) Textiles

An introduction to the properties and uses of natural and synthetic fibers; fabric identifications; buying and use of fabrics for clothing and home use. 2 class hours, 1 2-hour laboratory period. Credit, 3. Miss Hawes.

25. (I) Consumer Clothing Problems

Three fundamental approaches: consumer education in the field of ready-to-wear; a study of art and psychology applied to selection of apparel; basic principles of construction. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mrs. Jarvesoo, Miss Hawes.

30. (II) Food Science and Preparation

The fundamental scientific principles and comparative methods of food preparation. The nutritional and economic aspects of foods are also stressed. Prerequisite, Chemistry 33. 2 class hours. 1 3-hour laboratory period. Credit, 3. Miss Davis.

HOME ECONOMICS

31. (I) Applied Art

Experimentation in design, color, selection and arrangement with use of various media. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Miss Briggs.

35. (I) and (II) Clothing Construction

Advanced construction and fitting problems. Late in the semester provision is made for individual development in advanced construction problems or in creative pattern drafting. Prerequisite, Home Economics 25 or equivalent. 2 class hours, 1 2-hour laboratory period. Credit, 3. Miss Hawes, Mrs. Jarvesoo.

41. (I) Nutrition and Food Preparation (For Nurses)

Combines the fundamentals of nutrition with food preparation and meal planning to meet nutritional requirements. For nurses whose responsibilities will be mostly with their patients. Admission by permission of the School. Prerequisites, Chemistry 1 and 2; Zoology 35. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mrs. Cook, Mrs. Boicourt.

51. (I) Meal Management

Management of money, time and labor in selection, planning, preparation, utilization and care of food. Further study of food principles to meet nutritional needs. Prerequisite, Home Economics 30. 2 class hours, 1 3-hour laboratory period. Miss Davis.

52. (II) Nutrition and Dietetics

Energy needs, the metabolism of proteins, carbohydrates, fats, vitamins, and minerals; and the quantitative requirements for essential nutrients; and the composition of foods. Prerequisites, Home Economics 3, 51; Chemistry 79; Zoology 35. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mrs. Cook.

54. (II) Nutrition

For students who are not majoring in Home Economics. Designed to interpret the technical knowledge of foods and nutrition in terms of its practical application. 3 class hours. Credit, 3. Mrs. Cook.

56. (II) Meal Planning

Designed for those who wish a general knowledge of basic food principles, menu planning and food preparation. Emphasis on consumer buying and family meal management. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mrs. Boicourt.

60. (II) Household Equipment

The selection, care, and operation of household equipment including application of the principles of mechanics and physics involved. 2 class hours, 1 3-hour laboratory period. Credit, 3. Miss Merriam.

61. (I) Demonstration Techniques

Techniques of demonstration both in preparation of food and the use of equipment, with application to teaching extension and business. Prerequisite, Home Economics 51 or 56. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Miss Davis.

62. (II) Home Furnishing

The fundamental principles of planning and furnishing a satisfying home. A study of period homes and furnishings is included. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Miss Briggs.

63. (I) Arts and Crafts

Adapted to work in schools, playgrounds, camps; and in recreational leadership and occupational therapy. Wood and leather work, block printing, finger-painting, etching, knotting, etc. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Miss Briggs.

70. (I) and (II) Child Development

The study of the child from the developmental point of view. Planned observation and participation in the Nursery School. 3 class hours, 1 1-hour laboratory period. Credit, 3.

71. (I) Retail Food Buying

Offered jointly by the departments of horticulture, animal husbandry, and poultry husbandry and home economics for students interested in retail marketing. Vegetable and fruits; poultry and eggs; meats; processed and packaged foods. 2 class hours, 1 2-hour laboratory period. Credit, 3. Messrs. Snyder, Vondell, Buck. Mrs. McCullough, coordinator.

73. (I) Child Nutrition

Nutritional needs from prenatal life through school age. Methods of judging nutritional status, also causes and effects of malnutrition. Opportunity for laboratory work in the Nursery School. Prerequisite, Home Economics 3 or 52 or 54. 3 class hours, laboratory hours by arrangement. Credit, 3. Mrs. Cook.

75. (I) Economics of the Household

The principles of management applied to the home, including time, energy, money, human relations, and consumer education. 3 class hours. Credit, 3. Miss Merriam.

77. (I) and (II) Home Management Practice

Successive groups live in residence and assume responsibilities involved in managing a home, including some entertaining, with meals at three income levels. Prerequisites, Home Economics 51 or 56, and 75, or by special permission. Credit, 3. Miss Merriam.

78. (II) Textile Design (1960-61)

Weaving and handling of looms, stenciling, silk screen printing, batik, block printing, with individual problems. Offered in alternate years. Prerequisite, Home Economics 31 or its equivalent. 1 class hour, 2 3-hour laboratory periods. Credit, 3. Miss Briggs.

80. (II) Family Life

A study of the modern family; ideals and responsibilities of the home and the individual's share in developing positive family relationships. Not offered 1961-62. 3 class hours. Credit, 3.

HOME ECONOMICS

81. (I) Methods of Teaching Home Economics

Application of home economics to school and adult education programs, stressing instructional methods and techniques. This course gives credit toward meeting state standards for teachers. 3 class hours. Credit, 3. Mr. Sullivan.

85. (I) Theory and Practice of Nursery School Management

Philosophy and organization of the nursery school program. Directed experience in program planning and guidance of young children. Prerequisite, Home Economics 70 or equivalent. 2 class hours, 1 3-hour laboratory period. Credit, 3. Miss Weaver.

86. (II) Advanced Textiles (1961-62)

An evaluation of the roles of newer fibers and finishes as they affect the appearance, performance, care and cost of apparel and household textiles. Offered in alternate years. Prerequisite, Home Economics 4. 3 class hours. Credit, 3. Miss Hawes.

87. (I) Principles and Practices of Tailoring

Emphasis on handling of wool in the making of suits and coats. Prerequisite, Home Economics 35, or equivalent. 1 class hour, 1 4-hour laboratory period. Credit, 3. Mrs. Jarvesoo.

88. (II) Applied Dress Design

Costume design through draping and pattern making. An intensive study of texture, line, color and fit as applied to dress design and the figure. Prerequisite, Home Economics 35 or equivalent. 3 2-hour laboratory periods. Credit, 3. Mrs. Jarvesoo, Miss Hawes.

89. (I) Diet Therapy

Diet in disease, including gastro-intestinal disorders, obesity, anemia, fevers, diabetes, food allergy, cardiovascular and biliary tract diseases. Current medical literature used. Prerequisites, Home Economics 52; Chemistry 79; Zoology 35, or equivalent. 3 class hours. Credit, 3. Mrs. Cook.

91. (I) Institutional Administration

Principles of organization, personnel management, sanitation, food, service layouts and equipment. Field trips in the area. Prerequisite, Home Economics 51 or 56. 2 class hours, 1 6-hour laboratory period or field work. Credit, 4. Mrs. McCullough.

92. (I) and (II) Quantity Food Preparation

Principles of quantity food preparation, service and costs. Food preparation and special catering at a University dining hall. Offered first semester for Food Management majors. Prerequisites, Home Economics 51 or 56; or Food Management 33 and Home Economics 30. 2 class hours, 1 6-hour laboratory period or field work. Credit, 4. Mrs. McCullough.

93. (I) Experimental Foods

The testing and comparing of different food materials and methods of preparation, including advanced work in the science and techniques of cookery. Prerequisite, Home Economics 30. 2 class hours, 1 3-hour laboratory period. Credit, 3. Miss Davis.

HORTICULTURE

95. (I) 96. (II) Professional Seminars

Nutrition, Textiles, Clothing, Foods, Education, Institution Administration, Home Management and Equipment, Child Growth and Development. One seminar required of each senior; permission may be granted to take as many as three. Credit, 1-3.

97. (I) 98. (II) Problems in Home Economics

An intensive study of some phase of home economics. By permission of the Staff adviser. Credit, 1-3.

HORTICULTURE

Head of Department: PROFESSOR ARTHUR P. FRENCH. PROFESSORS BOICOURT, SNYDER, SOUTHWICK, THOMSON; ASSISTANT PROFESSORS JESTER, ROSS, TUTTLE; MESSRS. ANDERSON, GODDARD, MAYNARD.

2. (II) Basic Horticulture

An introductory study of the classification, location, composition, structure, flowering, fruiting, training, pruning, environmental adaptation, nutrition, and storage of horticultural crops. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Southwick.

27. (I) Deciduous Orchards

The scientific principles governing the establishment and maintenance of deciduous orchards. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. French, Mr. Anderson.

28. (II) Systematic Pomology (1961-62)

The kinds and varieties of fruits; their nomenclature, classification, identification; and growth and fruiting habits as related to training. Given in alternate years. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Anderson.

29. (I) Small Fruits

A study of the principles governing the establishment and management of berry and other small-fruit plantings. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Anderson.

31. (I) Plant Propagation

The principles of plant propagation by seed and vegetative means, combined with useful techniques. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Boicourt, Mr. Maynard.

32. (II) Commercial Olericulture

A detailed study of the cultural problems involved in the commercial production of specific vegetable crops. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Maynard.

53. (I) Commercial Olericulture (1960-61)

The principles basic to vegetable farm organization, management, and cultural practices as related to the commercial production of vegetable crops. Given in alternate years. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Thomson.

HORTICULTURE

54. (II) Herbaceous Plants

The identification, culture and use of annuals, biennials, perennials, bulbs, bedding plants, and roses in ornamental gardens. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Boicourt.

55. (I) Floral Arrangement

The basic principles of design as applied to commercial retail flower arrangement. For students specializing in Floriculture; others by permission of instructor. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Ross.

58. (II) Amateur Floriculture

This course stresses (1) garden flowers and their use, (2) foliage and flowering plants for indoor use and their propagation, (3) flower arrangement. For non-majors only. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Jester, Mr. Ross.

62. (II) Plant Breeding Methods

An advanced study of genetic topics peculiar to plants, also the methods and problems of the plant breeder. Prerequisite Zoology 53. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. French.

65. (I) Systematic Olericulture (1961-62)

An intensive study of the history, ontogeny, nomenclature, classification, identification, and structure of the various kinds, varieties, and strains of vegetables. Given in alternate years. 2 class hours, 4 laboratory hours. Credit, 4. Mr. Maynard.

73. (I) Produce Marketing Practices

Methods of preparing produce for market, post harvest handling, quality control, precooling, packinghouse facilities, commercial grades, packs, packages and inspection services. 3 class hours. Credit, 3. Mr. Snyder.

74. (II) Merchandizing of Perishables

Merchandising produce through wholesale and retail channels, emphasizing prepackaging, types of wholesale and retail outlets and operators, methods of sale, regulations, brands and advertising. 3 class hours. Credit, 3. Mr. Snyder.

75. (I) 76. (II) Commercial Floriculture

Cultural methods for important commercial cutflower crops and potted plants; marketing of flowers and plants; and methods of keeping records and cost analysis. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Jester.

95. (I) Seminar

For all seniors specializing in the areas of floriculture, olericulture, and pomology. 1 class hour. Credit, 1. Mr. French.

97. (I) 98. (II) Special Problems in Horticulture

Advanced study of special topics, research literature review, and original investigations in the area of the student's specialization. 1 class hour, 4 laboratory hours. Credit, 3. Staff.

JOURNALISM

JOURNALISM

PROFESSOR MUSGRAVE

51. (I) Introduction to Mass Communication

Problems of communication media, including the communications revolution, freedom of the press, the communication process, methods of reporting and writing, communication theory and research. 3 class hours. Credit, 3. Mr. Musgrave.

52. (II) Language and Mass Communication

Analysis of major approaches to language problems as they relate to mass communication media and the student's skill in communication. 3 class hours. Credit, 3. Mr. Musgrave.

62. (II) Article Writing

A study of magazine journalism; instruction in the writing of feature or magazine articles. 3 class hours. Credit, 3. Mr. Musgrave.

95. (I) Seminar

Writing for publication and training in copy editing. University student publications and town newspapers are used as laboratories. 2 class hours, 1 laboratory period. Credit, 3. Mr. Musgrave.

96. (II) Seminar

Individual projects in such areas as civil rights and the press, foreign journalism, history of journalism, criticism of mass media, combined with work in a communication media. Admission by permission of instructor. 2 class hours, 1 laboratory period. Credit, 3. Mr. Musgrave.

LANDSCAPE ARCHITECTURE

Head of Department: PROFESSOR RAYMOND H. OTTO. PROFESSOR BLUNDELL;
ASSOCIATE PROFESSOR PROCOPIO; ASSISTANT PROFESSORS HAMILTON, KENT;
VISITING LECTURERS BACON, KANTIANIS.

2. (II) Landscape Drafting

The mechanical aspects of the designer-draftsman, including the simple projections—orthographic, perspective, and isometric. 3 2-hour laboratory periods. Credit, 3. Mr. Procopio.

23. (I) Survey of Landscape Architecture

The history and literature of landscape architecture and allied fields, including an examination of traditional styles of gardens. 3 class hours. Credit, 3. Mr. Otto.

24. (II) Topography and Construction

Contour interpolation, grading and drainage, drive design, profiles and sections, computation of earthwork. Application of surveying to landscape construction. Prerequisites, Civil Engineering 27; Landscape Architecture 2. 1 class hour, 3 2-hour laboratory periods. Credit, 4. Mr. Hamilton.

LANDSCAPE ARCHITECTURE

28. (II) Basic Design

The elements and principles of design, the analysis of composition, and the application in design of forms and motifs, drawn from nature. Prerequisites, Landscape Architecture 2 and 23 or permission of instructor. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Otto.

30. (II) Plant Materials

Detailed study of deciduous and evergreen trees, with special reference to mature form and character, means of identification, natural associations, and uses in landscape work. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Hamilton.

53. (I) Applied Design

A series of problems in the design of small home grounds and larger private properties. Prerequisites, Landscape Architecture 2, 28. 1 class hour, 3 2-hour laboratory periods. Credit, 4. Mr. Kent.

54. (II) Intermediate Design

Special problems in site planning for semi-public and public works, institution grounds, etc. A field trip is required, costing approximately \$40.00. Prerequisites, Landscape Architecture 24, 53. 1 class hour, 3 2-hour laboratory periods. Credit, 4. Mr. Kent.

55. (I) Construction Details

A series of problems in architectural garden features as walks, steps, walls, fences, pools and small structures. Prerequisite, Landscape Architecture 24. 1 class hour, 3 2-hour laboratory periods. Credit, 4. Mr. Procopio.

59. (I) Plant Materials

Detailed study of shrubs and woody vines, and their identification, with special emphasis given to their adaptability to landscape uses, methods of handling, and care. 2 3-hour laboratory periods. Credit, 3. Mr. Hamilton.

67. (I) Architecture

Architectural development, including styles and forms in architecture, especially as affected by materials and methods of construction. 3 class hours. Credit, 3. Mr. Kantianis.

68. (II) Architectural Design

The relations between exterior and interior spaces and structures as a primary element in design and construction. A series of problems integrating theory, design analysis, and graphics. Prerequisite, Landscape Architecture 67. 1 class hour, 2 3-hour laboratory periods. Credit, 4. Mr. Spencer.

71. (I) Planting Design

The utilization of plant materials in combination as applied to the many conditions and demands of landscape work. Prerequisites, Landscape Architecture 30, 59. 2 3-hour laboratory periods. Credit, 3. Mr. Blundell.

73. (I) 74. (II) City Planning

The historical and legal aspects of land use and regional development, and a critical examination of planning techniques used in guiding the physical growth of communities. 3 class hours. Credit, 3. Mr. Bacon.

MATHEMATICS

75. (I) 76. (II) Projects in Planning

An application of the principles of modern civic development through a series of problems on the design of various types of urban land areas. Prerequisites, Landscape Architecture 73, 74, or permission of instructor. 3 2-hour laboratory periods. Credit, 3.

81. (I) 82. (II) Advanced Design

Exchange problems plus specialized landscape details and a summary of design. A field trip is required, costing approximately \$40.00. Prerequisites, Landscape Architecture 53, 54. 1 class hour, 3 2-hour laboratory periods. Credit, 4. Mr. Procopio.

84. (II) Presentation

Preparation and rendering of landscape and architectural plans, elevations, perspectives, etc. 2 2-hour laboratory periods. Credit, 2. Mr. Kantianis.

96. (II) Professional Practice

A seminar on the methods and procedures of the professional office. Prerequisite, Landscape Architecture 81, or permission of instructor. 1 class hour. Credit, 1. Mr. Otto.

MATHEMATICS

Head of Department: PROFESSOR ALLEN E. ANDERSEN. PROFESSOR WAGNER; ASSOCIATE PROFESSORS ARCHER, AZPEITIA,* BOUTELLE, CULLEN, DICKINSON; ASSISTANT PROFESSORS ALLEN, BARR, BROWN, KILLAM, LAVALLEE, MCHAFFEY, NORVIG, RILEY, STOCKTON; MRS. COOK, MRS. EPSTEIN, MISS LANDOLFI, MRS. RICE, MESSRS. BUSSEL, HALM, KENNEDY, MENTO, NAYLOR.

01. (I) Elementary College Algebra

Intended for those students who offer only one unit of algebra for entrance. A review of elementary algebra and a more thorough study of such topics as quadratic equations, exponents and radicals, and progressions. No college credit is given for this course. 3 class hours. Credit, 0.

1. (I) (II) Introductory Mathematics I

Basic set-theoretic and axiomatic concepts, number systems and equations. A study of elementary functions, algebraically and by the methods of analytic geometry. 3 class hours. Credit, 3. /

2. (I) (II) Introductory Mathematics II

A terminal course intended for students whose curriculum calls for just one year of mathematics. A continuation of Mathematics 1, including topics from the calculus, statistics, and mathematics of finance. Prerequisite, Mathematics 1. 3 class hours. Credit, 3.

4. (I) (II) Introductory Mathematics IV

A continuation of Mathematics 1 for those students intending to take further courses in mathematics. Trigonometry, Introduction to analytic geometry and calculus. Prerequisite, Mathematics 1. 3 class hours. Credit, 3.

* On leave of absence.

MATHEMATICS

5. (I) (II) Introductory Engineering Mathematics

Introduction to analytic geometry and calculus. 4 class hours. Credit, 4.

6. (I) (II) Introductory Calculus for Engineering

Continuation of Mathematics 5. Prerequisite, Mathematics 5. 4 class hours. Credit, 4.

7. (I) (II) Algebra and Trigonometry

For freshmen Engineers who are deficient in trigonometry. Fractions, quadratic equations, exponents, logarithms, variation, determinants of the second and third orders, and plane trigonometry. 3 class hours. Credit, 3.

12. (I) (II) Functional Mathematics

For freshmen in home economics, nursing, and physical education. Fractions, percentage, linear and quadratic equations with applications, exponents, logarithms, slide rule, proportion, graphs, statistics, progressions, and the elements of mathematics of investments. 3 class hours. Credit, 3.

29. (I) (II) Calculus

Further basic ideas and methods of analytic geometry and calculus. Prerequisite, Mathematics 4. 3 class hours. Credit, 3.

30. (I) (II) Calculus

A continuation of Mathematics 29 with special emphasis on applications. Prerequisite, Mathematics 29. 3 class hours. Credit, 3.

31. (I) (II) Applied Calculus for Engineers

Parametric equations, vectors, determinants, partial differentiation, multiple integrals. Prerequisite, Mathematics 6. 4 class hours. Credit, 4.

32. (I) (II) Applied Calculus for Engineers

Infinite series, expansion of functions, hyperbolic functions, differential equations. Prerequisite, Mathematics 31. 4 class hours. Credit, 4.

51. (I) Modern Euclidean Geometry

Axiomatic foundations of Euclidean and related geometries of various dimensions; extension of high school geometry. Prerequisite, Mathematics 4. 3 class hours. Credit, 3.

53. (I) 54. (II) Introduction to Modern Algebra

Development of the rational number system; basic algebraic concepts and structures; applications to classical number theory and the classical theory of polynomial equations; Boolean algebra; matrices and determinants. Prerequisite, Mathematics 4. 3 class hours. Credit, 3.

55. (I) Mathematics of Finance

The mathematical principles of simple and compound interest, annuities, depreciation, valuation of bonds, and insurance. Prerequisite, Mathematics 1, 5 or 7. 3 class hours. Credit, 3.

56. (II) Synthetic Projective Geometry

An axiomatic study (emphasizing synthetic methods and not restricted to the plane) of geometric properties invariant under projection. Prerequisite, Mathematics 4. 3 class hours. Credit, 3.

57. (I) Linear Programming and Theory of Games

Topics include sets, probability, vectors, matrices, and an introduction to linear programming and theory of games. Prerequisite, Mathematics 2 or 4. 3 class hours. Credit, 3. Total credit for Mathematics 54 and 57 is limited to 4 credit-hours because of duplication of topics.

58. (II) Introduction to Digital Computers

The basic digital computing system, introduction to Boolean Algebra, logical design of computers, programming, coding, utility programs, criteria for evaluation of computers. Prerequisite, Mathematics 30 or permission of instructor. 3 class hours. Credit, 3.

63. (I) Statistics

Derivation of the basic formulas, averages; dispersion, skewness, curve fitting, least squares, linear and curvilinear correlation, probability and its application to statistics. Prerequisite, Mathematics 29, previously or concurrently. 3 class hours. Credit, 3.

64. (II) Statistics

A continuation of Mathematics 63. Joint distribution of random variables; chi-squared, t-, and F-distributions with applications; techniques involving no assumption about basic distributions. Prerequisites, Mathematics 29, 63. 3 class hours. Credit, 3.

66. (II) Analytic Projective Geometry

A study, by means of coordinate systems and the methods of abstract algebra, of geometric properties invariant under projection. Prerequisite, Mathematics 54. 3 class hours. Credit, 3.

68. (II) Vector Spaces

Geometry of n-dimensional spaces in vector formulation, with special reference to characteristic values, characteristic vectors, Hermitian forms and the unitary group. Prerequisite, Mathematics 30 or 32. 3 class hours. Credit, 3.

71. (I) Vector Analysis

The Algebra and Calculus of vectors. Applications to Physics and other fields will be considered. Prerequisites, Mathematics 30; Physics 26. 3 class hours. Credit, 3.

72. (II) History of Mathematics

Topics include classical problems and concepts of mathematics and the lives and times of the great mathematicians. Prerequisite, Mathematics 30. 3 class hours. Credit, 3.

74. (II) Theory of Numbers

Euclid's Algorithm, theory of prime numbers, aliquot parts, congruences, further topics in number theory. Prerequisite, Mathematics 53. 3 class hours. Credit, 3.

81. (I) Complex Analysis

The Algebra of complex numbers, the elementary functions and their mappings, differentiation, integration, Taylors series, and residues. Prerequisite, Mathematics 92 or 32. 3 class hours. Credit, 3.

AIR SCIENCE

83. (I) Numerical Analysis

Approximation and error evaluation; finite differences; approximation by polynomials using finite difference methods and minimal criteria; special reference to sets of orthogonal polynomials. Prerequisite, Mathematics 32 or 91. 3 class hours. Credit, 3.

84. (II) Numerical Analysis

Evaluation of definite integrals; solution of differential equations, polynomial equations, other conditional equations, and systems of linear equations with related matrix manipulations. Prerequisites, Mathematics 83, 92 or 32. 3 class hours. Credit, 3.

91. Intermediate Calculus

Series, expansion of functions, partial differentiation, and multiple integrals. Prerequisite, Mathematics 30. 3 class hours. Credit, 3.

92. Differential Equations

Prerequisite, Mathematics 91. 3 class hours. Credit, 3.

93. (I) Fourier Series and Orthogonal Functions

Solutions of boundary value problems by Fourier series, Bessel functions, Legendre polynomials; convergence of representations by orthogonal functions. Prerequisite, Mathematics 92 or 32. 3 class hours. Credit, 3.

94. (II) Theoretical Advanced Calculus

Completeness properties of the set of real numbers; continuity, derivatives, and integrals of functions of one and several variables; mean value theorems. Prerequisites, Mathematics 92 or 32, and permission of the department. 3 class hours. Credit, 3.

97. (I) 98. (II) Advanced Topics

Several topics intended for individuals or small groups of students. Admission by permission of the Head of the Department. Credit, 1, 2, or 3 each semester.

AIR SCIENCE

Head of Department: PROFESSOR (COLONEL) JOHN C. MARCHANT. ASSISTANT PROFESSORS (LT. COLONEL) SPRAGUE, (LT. COLONEL) VINSKEY, (CAPTAIN) COSTANTINO, (CAPTAIN) KILLION, (CAPTAIN) MARTIN.

1. (I) Leadership Laboratory

A formalized phase of leadership training designed to provide experiences in the application of leadership principles through drill, group discussion, panels, and other suitable media. 1 laboratory hour. Credit, 0.

2. (II) Foundations of Air Power I

An introduction to the fundamentals of Air Power, to include basic aeronautical science and the organization and operation of the military arm of the Federal Government. 2 class hours; 1 laboratory hour. Credit 1.

MILITARY SCIENCE

25. (I) Foundations of Air Power II

A more advanced consideration of Air Power with emphasis on the basic concepts governing the employment of air forces, including operations in space. Prerequisites, Air Science 1, 2 or Military 1, 2 and permission of department. 2 class hours; 1 laboratory hour. Credit, 1.

26. (II) Leadership Laboratory

A continuation of Air Science 1. 1 laboratory hour. Credit, 0.

51. (I) Staff Organization and Military Management

A study of staff organization and functions, and the application of management principles in the USAF. Prerequisites, Air Science 25, 26 or Military 25, 26 and permission of department. 1 class hour; 1 laboratory hour. Credit, 1.

52. (II) The Military Justice System

A study of the system by which military justice is administered; the relationship between military and civil law. 1 class hour; 1 laboratory hour. Credit, 1.

75. (I) Weather and Navigation

An introduction, presenting the weather and navigational aspects of air-manship, such as temperature, pressure, air masses, precipitation, weather charts, navigational charts and dead reckoning navigation. Prerequisites, Air Science 51, 52. 1 class hour; 1 laboratory hour. Credit, 1.

76. (II) The Air Force Officer

A study of Air Force administrative procedures; the responsibilities and obligations of the Air Force officer; and rules of conduct of the armed services. 1 class hour; 1 laboratory hour. Credit, 1.

MILITARY SCIENCE

Head of Department: PROFESSOR (COLONEL) JAMES R. WEAVER. ASSISTANT PROFESSORS (MAJOR) HUFF, (MAJOR) SACRA, (CAPTAIN) HATHAWAY, (CAPTAIN) HOWDEN, (CAPTAIN) LESLEY, (CAPTAIN) MURRAY, (CAPTAIN) PHILLIPS, (CAPTAIN) WILLIAMS, (CAPTAIN) WILSON.

1. (I) (II)

Organization of the Army; individual weapons; American military history from the colonial wars to the Civil War; and leadership, drill, and the exercise of command. 3 scheduled hours plus leadership laboratory. Credit, 1.

2. (I) (II)

Theoretical and practical instruction in individual weapons and marksmanship; American military history from the Civil War to the present; leadership, drill, and the exercise of command. 3 scheduled hours plus leadership laboratory. Credit, 1.

25. (I) (II)

Theoretical and practical instruction in map and aerial photograph reading; the United States Army and National Security Affairs; leadership, drill, and the exercise of command. 3 scheduled hours plus leadership laboratory. Credit, 1.

MUSIC

26. (I) (II)

Theoretical and practical instruction in basic tactics and techniques; leadership, drill, and the exercise of command. 3 scheduled hours plus leadership laboratory. Credit, 1.

51.* (I) 52.* (II)

Organization of Armor, tank driving, maintenance, military teaching methods; radio communications; tank gunnery; tactics and troop-leading procedures; leadership, drill and the exercise of command. 4 scheduled hours. Credit, 2.

75.* (I) 76.* (II)

The United States in World Affairs; military administration, law, boards, training management, advanced tactics, operations, estimates, and orders; intelligence; marches; leadership, drill and the exercise of command. 4 scheduled hours. Credit, 2.

97. (I) 98. (II)

Problems in military science for qualified advanced Armor ROTC students. Independent work on special problems or pertinent intensive studies in military science. Enrollment by arrangement with the Professor of Military Science. Credit, 1 or 2.

* An academic elective course must be taken either the first or second semester of both the junior and senior years. The elective selected must be approved by the PMS.

MUSIC

Head of Department: PROFESSOR DORIC ALVIANI. PROFESSOR KING; ASSISTANT PROFESSOR CONTINO; MR. SCHWARTZ.

1. (I) 2. (II) Music Theory—Fundamentals of Music

A study of the rhythmic, melodic, and harmonic structure of music. Sight singing and ear training. Admission by permission of instructor. Music 1 prerequisite to Music 2. 3 class hours, 2 laboratory hours. Credit, 3.

3. (I) 4. (II) Music Theory

Elementary Counterpoint and Harmony Rhythms, phrases, and short forms, in writing melodies and (in two or more parts) counterpoint and harmony. Introduction to musical analysis and the study of 20th century techniques. Prerequisite, Music 2 or equivalent. Music 3 prerequisite to Music 4. 3 class hours. Credit, 3.

12. (I) (II) Applied Music

The study of piano playing to gain proficiency in performance, including skill in sight reading, transposition, accompanying, and keyboard harmony. The department may approve a study of other instruments or voice production instead of piano. This course may be repeated several times. Music majors and minors are required to complete this course or its equivalent before they are eligible for credit. Undergraduate and graduate students may register for this course. A grade will be given each semester. 7½ hours or its equivalent. Credit, 0.

13. (I) 14. (II) Applied Music

Advanced study of literature and instrumental technique or voice production. Prerequisite, intermediate level of proficiency as determined by examination. 7½ hours or its equivalent. Credit, 1.

15. (I) 16. (II) Applied Music

Advanced study of literature and instrumental technique or voice production. Prerequisites, Music 13, 14. 7½ hours or its equivalent. Credit, 1.

17. (I) 18. (II) Applied Music

Advanced study of literature and instrumental technique or voice production. Prerequisites, Music 15, 16. 7½ hours or its equivalent. Credit, 1 each semester.

19. (I) 20. (II) Applied Music

Advanced study of literature and instrumental technique or voice production. Prerequisites, Music 17, 18. 7½ hours or its equivalent. Credit, 1 each semester.

21. (I) (II) 22. (I) (II) Instrumental Ensemble

Study and preparation for performance of compositions of instrumental music written in many styles and in various media. One credit recorded on completion of 21, 22. The sequence 21, 22 may be repeated. Credit, 1 for each two semesters. Mr. Contino.

23. (I) (II) 24. (I) (II) Vocal Ensemble

Preparation of various choral works to concert standard. Additional opportunities for instrumental accompanists and vocal soloists. 1 credit recorded on completion of 23, 24. The sequence 23, 24 may be repeated. Music 23 prerequisite to Music 24. Admission only by permission of instructor. Credit, 1 for each two semesters. Mr. King.

29. (I) (II) Music Appreciation—Introduction to Music

Rhythm, melody, harmony, tone quality, and other music materials. Form, music history. Listening to typical works by great composers. No previous training required. 3 class hours. Credit, 3.

53. (I) 54. (II) Music History—Historical Survey of Music

History and literature of music from early religious chant through 1750; and from 1750 through vocal and instrumental music of the 20th century. Prerequisite, Music 1 or 2 or 29 or permission of instructor. Music 53 not prerequisite to Music 54. 3 class hours. Credit, 3.

55. (I) Music History—Music from Monteverdi to Bach and Handel

The Baroque and Rococo Periods, including the music of such composers as Monteverdi, Schutz, Frescobaldi, Lully, Purcell, Corelli, Couperin, Rameau, the Scarlattis, Bach, Handel. Prerequisite, Music 53 or permission of instructor. 3 class hours. Credit, 3.

57. (I) Music History—Gothic and Renaissance Music

Chant and organum through Renaissance motet and madrigal. Reading, listening, score study, analysis. Prerequisite, Music 53 or consent of instructor. 3 class hours. Credit, 3.

MUSIC

59. (I) (II) Music History—Music of the 20th Century

Ravel, Stravinsky, Hindemith, Bartok, Schonberg, and others. American music. Reading, listening, score study, analysis. Prerequisite, Music 29 or 53 or 54, or consent of the instructor. 3 class hours. Credit, 3.

62. (II) Music History—Haydn, Mozart and Beethoven

Haydn, Mozart, Beethoven, their contemporaries, and immediate predecessors. Reading, listening, score study. Prerequisite, Music 54 or consent of instructor. 3 class hours. Credit, 3.

64. (II) Music History—Music of the 19th Century

A historical study of music in small and large forms and various media, including Lieder, chamber music, symphony, opera. Reading, listening, score study. Prerequisite, Music 54 or consent of instructor. 3 class hours. Credit, 3.

71. (I) 72. (II) Music Theory—Form, Analysis, and Composition

Analysis by score and sound, of textures and forms of various styles. Music 72 includes practice in original composition in all forms and for all media. Prerequisite, Music 4 or equivalent. Music 71 prerequisite to Music 72. 3 class hours. Credit, 3.

73. (I) 74. (II) Music Theory—Harmonic and Contrapuntal Techniques

A continuation of Music 72. Systematic study of chromatic harmony; use of various contrapuntal procedures. Some study of 20th Century styles and opportunities for free composition. Playing and score reading. Prerequisite, Music 72 or equivalent. Music 73 prerequisite to Music 74. 3 class hours. Credit, 3.

81. (I) Music Education—Basic Instrumental Music—Woodwinds

Tone production, technical dexterity, acoustical principles of the woodwind family with emphasis given to the clarinet, flute, oboe, bassoon. Literature and materials studied and evaluated. Prerequisite, Music 2. 3 class hours. Credit, 2.

82. (II) Music Education—Basic Instrumental Music—Brasswinds and Percussion

Tone production, technical dexterity, acoustical principles of the brasswind and percussion groups with emphasis given the cornet, French horn, trombone, and tuba. Literature and materials evaluated. Prerequisite, Music 2. 3 class hours. Credit, 2.

83. (I) Music Education—Basic Instrumental Music—Strings

Tone production, technical dexterity, acoustical principles of the string family with emphasis on the violin, viola, and cello. Literature and materials studied and evaluated. Prerequisite, Music 2. 3 class hours. Credit, 2.

85. (I) (II) Music Education—Music for Elementary Teachers

For the classroom teacher having little or no formal training in music. Principles of musical development with particular emphasis on classroom presentation. Rote and reading songs examined; processes of presentation evaluated. 3 class hours. Credit, 3.

NURSING

87. (I) (II) Music Education—Music Curriculum

Organization and administration of the music program and curriculum in the elementary and secondary school. Observation of area schools. Admission by permission of instructor. 3 class hours. Credit, 3.

89. (I) Music Education—Score Reading and Conducting

Open and closed scores are studied, analyzed, and played at the keyboard. Basic conducting techniques are applied to the material studied. Prerequisite, Music 2. 3 class hours. Credit, 3.

90. (II) Music Education—Score Reading and Conducting

Band, orchestral, and choral scores are studied, analyzed and conducted. As scheduling permits, choral and instrumental organizations are utilized for actual conducting. Prerequisite, Music 2. 3 class hours. Credit, 3.

NURSING

Dean: PROFESSOR MARY A. MAHER. ASSOCIATE PROFESSORS DiMAGGIO, GILMORE, MACDONALD; MISSES BAROLI, BYRNE, CLARKE, MR. MCGINNIS.

1. (I) Introduction to Nursing

Designed to assist the individual student in her personal adjustment to the basic collegiate nursing program. 1½ class hours. Credit, 1. Miss Byrne, Miss Macdonald, Mr. McGinnis.

2. (II) Fundamentals of Nursing I

A history and interpretation of American Nursing. 1½ class hours. Credit, 1. Miss Macdonald.

25. (I) Fundamentals of Nursing II

An introduction to the major health needs of people, and to the community organizations designed to help individuals, families, and communities meet their health problems. 1½ class hours. Credit, 1. Miss Byrne, Miss Maher.

26. (II) Fundamentals of Nursing Care

An introduction to nursing care fundamental for all patients through experience with selected patients in a general hospital. Includes a unit on the ethical, legal and group relationships and responsibilities of the student of nursing. 3 class hours, 1 4-hour clinical nursing laboratory period. Credit, 4. Miss Baroli, Miss Clarke, Miss Gilmore, Miss Macdonald.

51. (I) Medical and Surgical Nursing I

Through a study of major health problems of adults and experience with patients in a general hospital, the student begins to develop the ability to minister comprehensive nursing care. Prerequisite, Nursing 26. 10 class hours, 16 clinical nursing laboratory hours. 18 weeks. Credit, 17. Miss Baroli, Miss Clarke, Miss Gilmore, Medical and Allied Professional Staffs of the Springfield Hospital and other Health Agencies.

NURSING

52. (Summer) Maternal and Child Nursing I

Study of the growth and development of the child as related to basic needs and evidenced by personality development, responsibilities of marriage and family living. 12 class hours, 16 hours field practice, 4 weeks. Credit, 4. Miss DiMaggio, Allied Professional Staffs of Community Agencies.

54. (I) (II) Psychiatric Nursing

Provides an opportunity for the student to develop beginning skill in caring for the person who is mentally ill. Concepts from the fields of psychiatry, social science and social work are related to the health problems considered in the course. Prerequisite Nursing 51. 12 class hours; 16 clinical nursing laboratory hours, 8 weeks. Credit, 8. Mr. McGinnis, Psychiatric and Allied Professional Staffs of the Cooperating Hospitals and Agencies.

57. (I) (II) Maternal and Child Nursing

The first part of the course is developed around the growth and development of the child and the responsibilities of marriage and family living. Field practice is afforded in community agencies providing care for the well child.

The second unit, concerned with the meaning of pregnancy to the mother, baby and family, provides an opportunity for planning and ministering nursing care throughout the maternity cycle.

In the third part of the course, a developmental approach in studying the health needs of children is utilized and clinical experience in caring for sick children is provided. Prerequisite Nursing 51. 10 class hours, 16 clinical nursing laboratory hours. 18 weeks. Credit, 16. Miss DiMaggio, Obstetrical, Pediatric and Allied Professional Staffs of Wesson Maternity Hospital, Springfield Hospital and other Health and Community Agencies.

58. (I) (II) Public Health Nursing

The philosophy, scope and purpose of public health and public health nursing. Principles and practices of public health nursing are taught concurrently with selected experiences in an official and non-official public health nursing service. Prerequisites, Nursing 51, 57. 12 class hours, 24 public health nursing practice hours, 8 weeks. Credit, 8. Miss Byrne, Mr. Wisnieski, Professional Staffs of Visiting Nurse Association of Springfield, Springfield Health Department and other Health Agencies.

60. (I) (II) Medical and Surgical Nursing II

A continuation of Nursing 51. Enables the student to study and have experience with patients with special health problems in the special services of a general hospital. Prerequisite, Nursing 51. 10 class hours, 16 clinical nursing laboratory hours, 18 weeks. Credit, 17. Miss Baroli, Miss Clarke, Miss Gilmore, Medical and Allied Professional Staffs of the Springfield Hospital and other Community Agencies.

65. (II) Principles and Practices of Management in Nursing

The principles of management as applied to the nursing care of patients in a hospital nursing unit are emphasized. Prerequisite, Nursing 60. 8 class hours, 16 clinical nursing laboratory hours, 4 weeks. Credit, 3. The Department.

95. (I) Senior Nursing Seminar

The privileges and responsibilities of the professional nurse in modern society. 3 class hours. Credit, 3. Miss Macdonald.

PHILOSOPHY

Head of Department: PROFESSOR CLARENCE SHUTE. ASSISTANT PROFESSOR SWANSON; MESSRS. BRUMM, EHRLICH.

For an introduction to the field as a whole, freshman-sophomore students are advised to elect Philosophy 11 and/or 12, junior-senior students, Philosophy 51 and/or 52.

11. (I) 12. (II) Basic Ideas of Western Civilization

Critical analysis of the most pervasive religious, moral, scientific, and philosophical concepts in terms of which Western man has patterned his interpretations of human experience. 3 class hours. Credit, 3.

31. (I) and (II) Introduction to Logic and Scientific Method

An inquiry into the nature of critical thinking, including (1) the functions of language, (2) the structure of deductive arguments, (3) a glimpse at inductive methods. 3 class hours. Credit, 3. Messrs. Swanson, Brumm.

42. (I) and (II) Ethics

An examination of classical and contemporary theories concerning policy formation and the justification of personal decision and ways of life. 3 class hours. Credit, 3. Messrs. Ehrlich, Brumm.

51. (I) History of Philosophy—Ancient and Medieval

The development of Western thought from its earliest beginnings to the flowering of medieval scholasticism. Emphasis on the contribution of important movements and great thinkers. 3 class hours. Credit, 3. Mr. Shute.

52. (II) History of Philosophy—Modern

Continuation of Philosophy 51 from the Renaissance and the rise of modern science to 19th century idealism, positivism and voluntarism. 3 class hours. Credit, 3. Mr. Shute.

53. (I) The Philosophy of Plato (1961-62)

A study of the later dialogues for their analysis and resolution of major philosophical problems and for their influence on contemporary thought. (In alternate years.) Prerequisite, Philosophy 11, or 12, or 51. 3 class hours. Credit, 3.

55. (I) The Philosophy of Aristotle (1960-61)

Selections from the works of Aristotle are studied for an understanding of their systematic analysis and theory in the major fields of philosophy. Given in alternate years. Philosophy 11, or 12, or 51. 3 class hours. Credit, 3. Mr. Shute.

58. (II) Philosophy in the Age of Enlightenment

A study of texts by representative thinkers from Descartes and Locke to Kant. The relation of these thinkers to modern science and contemporary thought. Prerequisite, Philosophy 11 or 12 and permission of instructor, or 52. 3 class hours. Credit, 3. Mr. Ehrlich.

PHILOSOPHY

61. (I) Contemporary Philosophies

A survey of the diverse philosophical directions representing the intense activity of contemporary American and European thinking. Prerequisite, Philosophy 11 or 12 and permission of instructor, or 52, or 58. 3 class hours. Credit, 3. Mr. Ehrlich.

64. (II) Existential Philosophies

Examination by means of a study of selected original texts, of the main problems peculiar to this movement as a whole and to its main exponents individually. Prerequisites, Philosophy 11 or 12 and permission of instructor, or 51 and 52. 3 class hours. Credit, 3. Mr. Ehrlich.

67. (I) American Philosophy

Examination, by means of a study of selected original texts by the outstanding American philosophers, of their contribution to Western thought and American civilization. Prerequisite, Philosophy 11 or 12, or 51, or 52. 3 class hours. Credit, 3. Mr. Ehrlich.

68. (II) Oriental Philosophies

The leading philosophies of Asia with emphasis on India and the bearing of philosophical differences between East and West on the problem of mutual understanding. Prerequisite, Philosophy 11 or 12, or 51, or 52. 3 class hours. Credit, 3. Mr. Shute.

72. (II) Philosophy of Science

A critical analysis of the structure of scientific method and the language of science, the respective roles of induction and deduction in science, and the status of theoretical terms. 3 class hours. Credit, 3. Mr. Swanson.

75. (I) Symbolic Logic

An introduction to such topics as the nature of a decision procedure, completeness of quantification theory, definition of cardinal numbers via sets, object-languages and meta-languages. Prerequisite, Philosophy 31 or consent of the instructor. 3 class hours. Credit, 3. Mr. Swanson.

81. (I) Philosophy of Religion

Readings in contrasting religious philosophies followed by analysis of concepts involved in understanding religion as coherently related to the other aspects of experience. 3 class hours. Credit, 3. Mr. Shute.

82. (II) Aesthetics

Leading theories of the nature of art, the analysis of aesthetic experience, the distinctive function of art in culture and personality, and the principles of criticism. 3 class hours. Credit, 3. Mr. Brumm.

84. (II) Political Philosophy

An attempt to develop critically the moral basis of organized societal living on all levels, with special reference to contemporary problems of sovereignty and nationalism. Prerequisites, two semester courses in philosophy, or the approval of the instructor on the basis of studies in political thought. 3 class hours. Credit, 3.

PHYSICAL EDUCATION

85. (I) Metaphysics

Examination of metaphysical concepts in relation to their use and treatment by other disciplines. Emphasis on the problems of time, existence, reality, freedom and causality. Prerequisite, two semester courses in philosophy or the approval of the instructor. 3 class hours. Credit, 3.

86. (II) Theory of Knowledge

A study of such classical epistemological topics as the problems of perception, subject-object relation, *a priori* knowledge, the limits of empiricism. Prerequisites, two semester courses in philosophy or the approval of the instructor. 3 class hours. Credit, 3. Mr. Swanson.

95. (I) 96. (II) Seminar

In each term a study is made of one major philosopher or of one narrowly restricted subject in a special field of philosophical inquiry. Prerequisite, four semester courses in philosophy or the instructor's approval. 3 class hours. Credit, 3.

PHYSICAL EDUCATION FOR MEN

Head of Department: PROFESSOR S. W. KAUFFMAN. PROFESSOR BRIGGS; ASSOCIATE PROFESSORS BISCHOFF, RICCI; ASSISTANT PROFESSORS BOSCO, GARBER; MESSRS. BERGQUIST, COBB, DOUGLAS, JAMES.

Enrollment by non-majors in Skills and Techniques courses, only by permission of the instructor.

1, 2. (I) 3, 4. (II) Physical Education

Aim of the course is to inculcate in the student an adequate knowledge of, a sufficient technique in, and a wholesome attitude toward physical education activities through the medium of individual, dual, and team sports. 3 class hours. Credit, 2.

5. (I) Skills and Techniques

Fundamental skills and techniques of teaching. (Unit 1) lacrosse. (Unit 2) apparatus gymnastics. 60 clock hours per semester. Credit, 1.

6. (II) Skills and Techniques

Fundamental skills and techniques of teaching. (Unit 1) tumbling and trampolining. (Unit 2) badminton. 60 clock hours per semester. Credit, 1.

21. (I) Introduction to Physical Education

Origins of physical education, fundamental concepts, current status in education, qualifications and professional opportunities in the field. 3 class hours. Credit, 3.

22. (II) First Aid and Safety

Materials applicable to the immediate care of the injured, causes of accidents and procedures designed to develop desirable safety practices. 3 class hours. Credit, 3.

23. (I) Principles and Practices in Health Education

Principles of personal and community health, teaching techniques, materials and resources. 3 class hours. Credit, 3.

PHYSICAL EDUCATION

31, 32. (I) 33, 34. (II) **Physical Education**

A continuation of Physical Education 1, 2, 3 and 4. 3 class hours. Credit, 2.

35. (I) **Skills and Techniques**

Fundamental skills and techniques of teaching. (Unit 1) lacrosse. (Unit 2) wrestling. 60 clock hours per semester. Credit, 1.

36. (II) **Skills and Techniques**

Fundamental skills in life saving and water safety. Certification as American Red Cross Water Safety Instructor. 60 clock hours per semester. Credit, 1.

41. (I) **Human Anatomy**

A study of the gross structure and function of the human body. 2 class hours, 1 2-hour laboratory period. Credit, 3.

42. (II) **Kinesiology**

A study of the anatomical application basic to a thorough understanding of the mechanical problems in motor skills. Prerequisite, Physical Education 41. 2 class hours, 1 2-hour laboratory period. Credit, 3.

43. (I) **Officiating**

Techniques and practice in officiating major sports. 2 class hours. Credit, 2.

53. (I) **Physical Education in Elementary and Secondary Schools**

Modern materials and methods of teaching physical education in elementary and secondary schools. 3 class hours. Credit, 3.

54. (II) **Methods of Physical Education**

Laboratory experience in teaching individual, dual and team activities. Credit, 1.

55. (I) **Organization and Administration of Physical Education**

A study of the basic problems in the organization and administration of physical education. 3 class hours. Credit, 3.

57. (I) **Methods and Materials: Coaching Baseball**

Development of individual skills and techniques of teaching and coaching baseball. 2 class hours. Credit, 1.

58. (II) **Methods and Materials: Coaching Track**

Development of individual skills and techniques of teaching and coaching track. 2 class hours. Credit, 1.

59. (I) **Adapted Physical Education**

Programs of developmental activities, suited to the interests and capacities of students with disabilities restricted from participation in activities of the general physical education program. Prerequisite, Physical Education 42. 3 class hours. Credit, 3.

60. (II) **Methods and Materials: Coaching Football**

Development of individual skills and techniques of teaching and coaching football. 2 class hours. Credit, 1.

PHYSICAL EDUCATION

61. (I) Methods and Materials: Coaching Basketball

Development of individual skills and techniques of teaching and coaching basketball. 2 class hours. Credit, 1.

62. (II) Methods and Materials: Coaching Soccer

Development of individual skills and techniques of teaching and coaching soccer. 2 class hours. Credit, 1.

63. (I) Skills and Techniques

Fundamental skills and techniques of teaching. (Unit 1) baseball. (Unit 2) basketball. 60 clock hours per semester. Credit, 1.

64. (II) Skills and Techniques

Fundamental skills and techniques of teaching. (Unit 1) high and low organization games. (Unit 2) track and field. 60 clock hours per semester. Credit, 1.

74. (II) Tests and Measurements

The statistical interpretation of data and the practical application of measurement to physical education. 3 class hours. Credit, 3.

75. (I) Athletic Injuries—Prevention and Care

The medical examination, techniques in support methods, therapeutic aids, clinical use of physiotherapy equipment. Prerequisite, Physical Education 42. 2 class hours, 1 2-hour laboratory period. Credit, 2.

76. (II) Philosophy and Principles of Physical Education

Contemporary interpretations and critical analysis for the foundation of policies and program construction. 3 class hours. Credit, 3.

78. (II) Physiology of Exercise

Application of basic physiological concepts to the program of physical education, emphasizing the physiological effects and adjustments accruing from participation in physical activity. Prerequisite, Physical Education 42. 2 class hours, 1 2-hour laboratory period. Credit, 3.

80. (I) and (II) Driver Education Instructor Course

Driver education and driver training at the instructor's level. Leads to certification as instructor in driver education and driver training. 2 class hours, 1 2-hour laboratory period. Credit, 3.

81. (I) Administration of Intramural Programs

Objectives, tourney design, organization and administration of intramural programs. 2 class hours. Credit, 1.

83. (I) Skills and Techniques

Fundamental skills and techniques of teaching. (Unit 1) volleyball. (Unit 2) tennis. (Unit 3) archery. 60 clock hours per semester. Credit, 1.

84. (II) Skills and Techniques

Fundamental skills and techniques of teaching. (Unit 1) dance. (Unit 2) golf. 60 clock hours per semester. Credit, 1.

PHYSICAL EDUCATION

97. (I) 98. (II) Special Problems Course

Presentation and discussion of research work in physical education, health, or athletics. 3 class hours. Credit, 3.

PHYSICAL EDUCATION FOR WOMEN

Head of Department: PROFESSOR RUTH J. TOTMAN. ASSOCIATE PROFESSORS HUBBARD, RIGGS; ASSISTANT PROFESSORS OGILVIE, REID, TEMPLIN, WALLACE; MISSES PRATT, ROBY, RUPP, MRS. DAMON.

1. (I) Introduction to Physical Education for Women

A brief survey of the various areas of physical education for all ages; the trends and opportunities in today's program. 2 class hours, 1 2-hour laboratory period. Credit, 2. Miss Totman.

2. (II) Introduction to the Child through Physical Education

A study of children as they take part in physical activities. 2 class hours, 1 2-hour laboratory period. Credit, 2. Miss Riggs.

5. (I) Physical Education

Students are required to pass a safety test in swimming. Except for this requirement all unrestricted students may select any activity which is offered. Fall season: archery, field hockey, folk dance, golf, lacrosse, life-saving, modern dance, swimming, synchronized swimming, tennis, volleyball. 3 class hours. Credit, 1.

6. (II) Physical Education

Winter II season: same as in Course 7. 3 class hours. Credit, 1.

7. (I) Physical Education

Winter I season: badminton, ballroom dance, basketball, body mechanics, bowling, diving, fencing, folk dance, gymnastics, life-saving, modern dance, swimming, synchronized swimming, tap dance, trampoline, volleyball. 3 class hours. Credit, 1.

8. (II) Physical Education

Spring season: archery, folk dance, golf, lacrosse, life-saving, modern dance, softball, swimming, synchronized swimming, tennis, volleyball. 3 class hours. Credit, 1.

10. (II) Health for Adults

Practical personal and community health problems for the consideration of young adults. 2 class hours. Credit, 2. Mrs. Templin.

11. (I) Skills

Field hockey, tennis; gymnastics, swimming. 6 class hours. Credit, 1.

12. (II) Skills

Folk dance, basketball; golf, softball. 6 class hours. Credit, 1.

PHYSICAL EDUCATION

25, 27. (I) 26, 28. (II) Physical Education

The seasonal activities for sophomores are the same as in Courses 5, 7, 6, and 8. The emphasis on perfecting techniques rather than learning the elementary skills. 3 class hours. Credit, 1.

30. (II) Aquatics

Techniques unique in the teaching of aquatics including the American Red Cross courses. 2 class hours, 1 2-hour laboratory period. Credit, 2. Miss Wallace.

31. (I) Skills

Archery, swimming; basketball officiating, dance. 6 class hours. Credit, 1.

32. (II) Skills

Dance, gymnastics; lacrosse, volleyball. 6 class hours. Credit, 1.

51. (I) Skills and Teaching Techniques

Soccer, speedball, hockey; tap dance, basketball. The chief emphasis will be on teaching techniques; however, improvement in skill will be stressed. 6 class hours. Credit, 2.

52. (II) Skills and Teaching Techniques

Gymnastics, ballroom dance; tennis, body mechanics. 6 class hours. Credit, 2.

53. Physical Education for Elementary Schools

Modern methods and material for teaching physical education in elementary grades. 2 class hours, 1 2-hour laboratory period. Credit, 3. Miss Riggs.

56. (II) Methods and Principles of Health Education for Elementary and Secondary Schools

To prepare students to teach health and hygiene in elementary and secondary schools. 3 class hours. Credit, 3. Miss Totman.

61. (I) Skills and Teaching Techniques

Fencing, folk dance, badminton. 6 class hours. Credit, 2.

62. (II) Skills and Teaching Techniques

Dance, bowling; lacrosse. 6 class hours. Credit, 2.

63. (I) Analysis of Rhythm

The analysis of the rhythmic structure of music and its application to motor activity. 2 class hours, 1 2-hour laboratory period. Credit, 3. Miss Roby.

70. (II) Organization and Administration

The organization of the school system, the role of the teacher, the necessary facilities and the program in physical education. 3 class hours. Credit, 3. Miss Ogilvie.

73. (I) History and Principles of Physical Education

A study of the principal methods of physical education throughout the western world and of the philosophical and scientific bases of learning and teaching as applied to physical education. 3 class hours. Credit, 3. Miss Ogilvie.

PHYSICS

83. (I) Adaptive Physical Education for Women

The problems of exercise for girls who are restricted physically. 3 class hours. Credit, 3. Miss Hubbard.

96. (II) Seminar

The opportunity for specialized study in a chosen area of physical education with emphasis on practical application. 3 class hours. Credit, 3. Miss Ogilvie.

PHYSICAL RECREATION

The following courses, taught jointly by the departments of Physical Education for men and Physical Education for women, are offered for majors within the school. Non-major admission is only by permission of the instructor.

13. (I) Skills and Techniques

Development of fundamental skills and methods of teaching and organizing groups for participation in badminton and basketball. 60 clock hours. Credit, 1.

14. (II) Skills and Techniques

Development of fundamental skills and methods of teaching and organizing groups for participation in games and archery. 60 clock hours. Credit, 1.

39. (I) Skills and Techniques

Development of fundamental skills and methods of teaching and organizing groups for participation in tennis and minor recreational sports. 60 clock hours. Credit, 1.

67. (I) 68. (II) Skills and Techniques

Development of fundamental skills and methods of teaching and organizing groups for participation in winter sports and the various dance forms including ethnic, social and modern. 60 clock hours. Credit, 1.

PHYSICS

Head of Department: PROFESSOR JOHN D. TRIMMER. PROFESSORS ROSEN, ROSS; ASSOCIATE PROFESSORS LEWIS, STEINBERG; ASSISTANT PROFESSORS FOLAND, JONES, MATHIESON, PUTNAM; MESSRS. BANGS, CROOKER, HSU.

3. (I) 4. (II) Introductory Physics

Mechanics, sound, heat; electricity, magnetism, light and modern physics, using trigonometry and algebra, but not calculus. Intended for premedical, premedical, preveterinary, and some science major students. Prerequisites, Mathematics 4 previously or concurrently for Physics 3; Physics 3 for Physics 4. 3 class hours, 1 2-hour laboratory period. Credit, 4.

5. (I) General Physics

Mechanics. For students primarily interested in physics, engineering, chemistry, or mathematics, who, in general, have had high school physics. Prerequisite, Mathematics 5 previously or concurrently. 2 class hours, 1 2-hour laboratory period. Credit, 3.

6. (II) General Physics

Heat, electricity, and magnetism. Prerequisites, Mathematics 5; Physics 5; Mathematics 6 concurrently. 2 class hours, 1 2-hour laboratory period. Credit, 3.

7. (I) (II) General Physics

Electromagnetic radiation, atomic and nuclear physics. Prerequisites, Mathematics 6; Physics 6. 3 class hours, 1 2-hour laboratory period. Credit, 4.

51. (I) 52. (II) Electricity and Magnetism

The basic phenomena and laws of electricity and magnetism. Measurement, with an introduction to circuitry and electronics. Prerequisites, Physics 4, and Mathematics 30 or 31 for Course 51; Course 51 for Course 52. 2 class hours, 1 2-hour laboratory period. Credit, 3.

54. (II) Meteorology

Theoretical treatment of various atmospheric phenomena, with correlation of observation and theory. Weather observations, preparation of weather charts, and weather forecasting. Prerequisites, Physics 4 or 6; Mathematics 30 or 31. 3 class hours. Credit, 3.

55. (I) 56. (II) Mechanics

Development of the fundamental concepts of dynamics with applications to particles and rigid bodies in translation and rotation. Prerequisites, Physics 4 or 6; Mathematics 30 or 31. 3 class hours. Credit, 3.

60. (II) Sound and Acoustics

Vibrations, coupled systems, sound structure, and acoustic properties; principles and applications. Prerequisites, Physics 4 or 7; Mathematics 30 or 31. 3 class hours. Credit, 3.

61. (II) Heat and Thermodynamics

Heat exchanges and related energy changes in systems of matter. Prerequisites, Physics 4 or 6; Mathematics 30 or 31. 3 class hours. Credit, 3.

63. (II) Optics

An intermediate course in geometrical and physical optics. Prerequisites, Physics 4 or 7; Mathematics 30 or 31. 2 class hours, 1 2-hour laboratory period. Credit, 3.

66. (I) Kinetic Theory

Classical kinetic theory of gases, with an introduction to phenomena in the non-uniform gas. Prerequisite, Physics 55. 3 class hours. Credit, 3.

67. (II) Statistical Mechanics and Information Theory

A study of the concepts of entropy, information, and order. Prerequisite, Physics 61. 3 class hours. Credit, 3.

75. (I) 76. (II) Advanced Experimental Work

Selected experiments and projects are investigated, according to the needs of the individual student. Prerequisites, Physics 51 or 55. 3 2-hour laboratory periods. Credit, 3.

POULTRY SCIENCE

85. (I) 86. (II) Modern Physics

Twentieth-century physics, the first semester devoted principally to atomic aspects, the second to nuclear. Prerequisites, Physics 52 and six other credits in junior-senior physics. 3 class hours. Credit, 3.

88. (II) Solid State Physics

An introduction to theoretical and experimental physics of the solid state. Prerequisite, permission of the instructor. 3 class hours. Credit, 3.

91. (II) Gaseous Electronics

Electrical conduction in gases, interactions of space charge and electromagnetic waves, plasmas. Prerequisite, Physics 52. 3 class hours. Credit, 3.

POULTRY SCIENCE

Head of Department: PROFESSOR THOMAS W. FOX. PROFESSORS MELLEN, SMYTH;
ASSISTANT PROFESSORS ANDERSON, GROVER; MR. SMITH.

25. (I) Introductory Poultry Management

Basic production management for commercial poultry operations; hatchery management, breeding and rearing, disease control, housing and equipment, and management programs for broiler and commercial eggs. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Smith.

62. (II) Turkey Production

Includes the production of ducks and geese but most of the time given to the turkey industry: its importance, breeds, breeding, incubation, brooding, feeding, finishing, marketing, etc. 1 class hour, 1 2-hour laboratory period. Credit, 2. Mr. Smyth.

63. (I) Poultry Biology

Biological attributes of the domestic fowl. Emphasis on anatomy and physiology of the digestive, reproductive and endocrine systems and specific physiological responses to environmental influences. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Mellen.

65. (I) Marketing Poultry Products

Preparation and grading of eggs and poultry products to meet requirements of northeastern markets. Processing and packaging poultry; grading, candling and quality studies of eggs. A one-half day class trip is required at an estimated cost of two dollars. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Smith.

73. (I) Poultry Nutrition (1962-63)

The scientific principles of nutrition, nutritive classification of feedstuffs, formulation and calculation of rations for specific purposes. A class trip may be arranged. Given in alternate years. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Anderson.

77. (I) Poultry Breeding (1962-63)

The improvement of poultry by selection is developed through a study of the principles of heredity. The inheritance of morphological and physiological characters. Given in alternate years. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Fox.

PSYCHOLOGY

78. (II) Advanced Poultry Business Management

Designed to give the student a comprehensive view of all phases of the poultry industry. Principles of poultry business management. 3 class hours. Credit, 3. Mr. Grover.

97. (I) 98. (II) Poultry Problems

Designed to allow students to pursue independent study in specific subject areas involving either extensive literature review or an experimental approach to a specific problem. Credit, 1-3. The Staff.

PSYCHOLOGY

Head of Department: PROFESSOR CLAUDE C. NEET. PROFESSORS FELDMAN, GOSS, KATES; ASSOCIATE PROFESSORS EPSTEIN, FIELD, TEICHNER; ASSISTANT PROFESSORS BUDOFF, DZENDOLET, LEWIT, MYERS, PRICE; VISITING LECTURERS FIELD, MYERS, OPPENHEIM, RIGGS, SCHERER, SIMON, TREHUB, WINDER.

26. (I) (II) General Psychology

An introduction to the principles and study of behavior. Topics considered include development of behavior, sensation, learning, thinking, motivation, intelligence, attitudes, and personality. 3 class hours. Credit, 3.

27. (I) (II) General Psychology

An introductory lecture-laboratory course having the same content as Psychology 26. 2 class hours, 1 2-hour laboratory period. Credit, 3.

28. (II) General Psychology

Problems of personality development and adjustment are emphasized. Psychological nature of man, conflict, fantasy and thinking, and adjustment. Prerequisite, Psychology 26 or 27. 3 class hours. Credit, 3. Mr. Kates.

51. (I) Sensory and Motivational Processes

A study of the data, theories and the methods of investigation of sensory, perceptual and motivational processes. Prerequisite, Psychology 26 or 27. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Dzendolet.

52. (II) Learning and Thinking

A consideration of the effects of practice and conditions of practice on acquisition, generalization, discrimination, transfer, retention and extinction phenomena. Prerequisite, Psychology 26 or 27. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Goss.

56. (I) (II) Educational Psychology

Psychological principles and facts fundamental to educational situations. Major areas studied are: learner, learning, adjustment, guidance, teacher, teaching methods, evaluation and measurement. Prerequisite, Psychology 26 or 27. 3 class hours. Credit, 3. Mrs. Myers.

61. (I) Social Psychology I

Development, interrelationships, and functions of attitudes. Emphasis upon religious and political behavior, psychoanalytic and behavioristic theories of prejudice, attitude measurement, propaganda, group persuasion. Survey project. Prerequisite, Psychology 26 or 27. 3 class hours. Credit, 3. Mr. Lewit.

PSYCHOLOGY

62. (II) Social Psychology II

Individual behavior in groups. Interpersonal perception and communication. Norms, power, leadership, and coalition formation. Individual motivation and group problem-solving. Prerequisite, Psychology 26 or 27. 3 class hours. Credit, 3. Mr. Lewit.

63. (I) Physiological Psychology

The neurophysiological bases of behavior. The structural and functional relationships among the nervous system, sense organs and drives. Prerequisites, Psychology 26 or 27; Zoology 35. 3 class hours. Credit, 3. Mr. Feldman.

65. (I) (II) Child Psychology

The psychological development of the child including maturation and development of behavior, language, emotions, intelligence, social behavior, motivation and personality. Nursery school observation and practice. Prerequisite, Psychology 26 or 27. 3 class hours. Credit, 3. Mr. Price.

66. (I) Psychology of Adolescence

A consideration of the development, and emotional, social and intellectual adjustment of the individual during the adolescent years. Prerequisite, Psychology 26 or 27. 3 class hours. Credit, 3. Mr. Price.

67. (I) Introduction to the Study of Exceptional Children

Emphasis is on the etiology, diagnosis, characteristics, education and prognosis of deviations in mental, physical and socio-emotional development. Prerequisites, Psychology 26 or 27, 94, or consent of the instructor. 3 class hours. Credit, 3.

72. (II) Advanced Experimental Psychology

The literature, techniques, and apparatus of experimental psychology. Selected projects carried out individually by the members of the class. Prerequisites, Psychology 51; Zoology 35. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Neet.

75. (I) Statistics in Psychology

The application of statistical procedures to the analysis of psychological data and to problems of measurement in psychology and related fields. Prerequisites, Psychology 26 or 27; Statistics 77 or Mathematics 62. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Myers.

79. (I) Personality

An introduction to the scientific study of personality. Topics include psychoanalytic and cognitive approaches, the influence of social-cultural conditions, personality types and learning. Prerequisite, Psychology 26 or 27. 3 class hours. Credit, 3. Mr. Kates.

81. (I) Psychological Tests

Survey of tests of intelligence, aptitude, interest, personality and adjustment. Test rationale, construction, characteristics, uses and evaluation are emphasized. Prerequisite, Psychology 26 or 27. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Budoff.

82. (I) and (II) Psychological Tests

A study of theories of intelligence and of individual intelligence tests. Prerequisite, Psychology 26 or 27. 2 class hours, 1 2-hour laboratory period. Credit, 3, Mr. Budoff.

83. (II) Abnormal Psychology

The etiology, symptoms and therapy of behavior abnormalities including the neuroses, psychoses, epilepsies, speech disorders and mental deficiency. Hospital trips and clinics. Prerequisite, Psychology 26 or 27. 3 class hours. Credit, 3. Mr. Neet.

85. (I) Industrial Psychology I

Psychological principles underlying personnel selection and training, communication and decision-making in industry. Prerequisite, Psychology 26 or 27. 3 class hours. Credit, 3. Mr. Teichner.

86. (II) Industrial Psychology II

Principles and applications of human factors data related to the analysis, design, evaluation, and use of man-machine systems and equipment. Prerequisite, Psychology 26 or 27. 3 class hours. Credit, 3. Mr. Teichner.

87. (I) Psychology of Occupations

A study of interests, abilities and attitudes related to occupational selection, proficiency, and satisfaction. Psychological techniques fundamental to occupational research are emphasized. Prerequisites, Psychology 26 or 27; Psychology 81. 3 class hours. Credit, 3.

88. (II) Psychology of Guidance

The psychological principles, techniques and tests necessary in guidance. Practice in organizing and evaluating relevant data in the analysis of illustrative cases. Prerequisites, Psychology 26 or 27 and 81 or consent of the instructor. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Field.

90. (II) Contemporary Psychologies

A logical, historical, and systematic analysis of contemporary psychological theories, including structuralism, functionalism, Gestalt and organistic psychologies, psychoanalysis, and behaviorisms. Prerequisite, Psychology 26 or 27. 3 class hours. Credit, 3. Mr. Goss.

92. (II) Clinical Psychology

An introduction to the theoretical approach and methods used in understanding and treating the psychologically-disturbed individual. Prerequisite, Psychology 83 or consent of the instructor. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Epstein.

97. (I) 98. (II) Problems in Psychology

For qualified seniors. Independent work on special problems or in certain fields of psychological interest. By arrangement with the members of the department. Credit, 1-3.

RECREATION LEADERSHIP

RECREATION LEADERSHIP

Head of Department: PROFESSOR WILLIAM E. RANDALL; MR. HARLOW.

1. (I) Introduction to Recreation

Fundamental concepts, current status, and established principles of recreation as a social force. Field trip. 3 class hours. Credit, 3.

2. (II) Social Recreation

Organization, leadership, and activity skills for the planning and conducting of social recreation programs. 1 class hour, 1 2-hour laboratory period. Credit, 2.

25. (I) Group Leadership

Foundations and tools for leadership. Successful leadership techniques for large and small groups such as clubs and committees. Field trips. 2 class hours, 1 2-hour laboratory period. Credit, 3.

26. (II) Camp Counseling

Operating procedures and program of organized camps. Camper guidance, program skills, and practical leadership experience. Two-night camping trip plus one day trip. 2 class hours, 1 2-hour laboratory period. Credit, 3.

53. (I) Nature Recreation

Contemporary programs, activity skills, and leadership techniques for recreation programs based upon the natural sciences. Prerequisite, Zoology 54 or consent of instructor. Field trips. 2 class hours, 1 2-hour laboratory period. Credit, 3.

56. (II) Operation of Recreation Facilities

Functions and methods for directors of various kinds of recreation facility. Field trip. 3 class hours. Credit, 3.

77. (I) Organization and Administration of Community Recreation

Functions and methods for supervisors and assistant superintendents of various types of recreation agency. Field trip. 3 class hours. Credit, 3.

79. (I) 80. (II) Practice Leadership

Professional field experience with an approved, cooperating recreation agency of the student's choice. Admission by permission of the department. 1 class hour, field work as required. Credit, 3.

96. (II) Concepts in Recreation

Critical consideration of basic concepts and of current controversies and problems. 2 class hours. Credit, 2.

97. (I) 98. (II) Special Problems

Individual intensive study of an aspect of recreation and the presentation of results in written form. Credit, 2-3.

ROMANCE LANGUAGES

Head of Department: PROFESSOR STOWELL C. GODING. PROFESSOR FERRIGNO; ASSOCIATE PROFESSORS CLARKE, DELHOMME, JOHNSON, WEXLER; ASSISTANT PROFESSORS EBERSOLE, GREENFIELD, RAYMOND, SMITH, STAIS; MRS. DELHOMME, MRS. FRAKER, MISS JAEGER, Mlle. MADEC, MISS SPARROW, MESSRS. BOUDREAU, FRAKER, FRANCHINI, HARVEY.

FRENCH

1. (I) 2. (II) Elementary French

For those who have had no previous training in French. Intensive practice in the four language skills. No credits in this course may be applied toward a degree until the close of the second semester, except upon special recommendation from the Provost. Sequence: French 1, 2, 7, 8. 3 class hours, 2 laboratory periods. Credit, 3.

5. (I) 6. (II) Intermediate French

For those who have had some French but are not prepared to take French 7. A review and continued study of the language skills. Readings in modern French literature. Sequence: French 5, 6, 8. 3 class hours, 1 laboratory hour. Credit, 3.

7. (I) Intermediate French; French Life and Culture

An intensive review and study of the language. Readings in modern French literature. Sequence: French 7, 8. Prerequisite, French 2 or equivalent. 3 class hours, 2 laboratory periods. Credit, 3.

8. (I) and (II) Intermediate French; French Life and Culture

A study of some important literary works of the 19th and 20th centuries. Compositions. Prerequisite, French 6 or 7. 3 class hours, 1 laboratory hour. Credit, 3.

25. (I) 26. (II) Great Works in French Literature

A study of selected complete works of several periods. 3 class hours, 1 laboratory hour. Credit, 3. Mr. Goding, Mr. Smith.

27. (I) 28. (II) Oral Practice

An advanced-level course designed to bring students to an accurate and mature grasp of French thought and expression. 3 class hours, 2 laboratory hours. Credit, 3. Mr. Smith.

51. (I) French Literature of the Eighteenth Century (1962-63)

Development of the ideas of the French Enlightenment. Given in alternate years. 3 class hours. Credit, 3. Mrs. Raymond.

53. (I) The French Theater of the Twentieth Century

A critical study of the French theater from Scribe to the present. 3 class hours. Credit, 3. Miss Clarke.

54. (II) The French Novel of the Twentieth Century

A critical study of the contemporary French novel from Proust to the present. 3 class hours. Credit, 3. Miss Clarke.

ROMANCE LANGUAGES

55. (I) French Literature of the Seventeenth Century (1961-62)

A study of the major genres of French Classicism, except the theater. Given in alternate years. 3 class hours. Credit, 3. Mr. Johnson.

56. (II) French Literature of the Seventeenth Century (1961-62)

French drama during the age of Classicism. Given in alternate years. 3 class hours. Credit, 3. Mr. Johnson.

57. (I) French Romanticism

A study of the Romantic period. Given in alternate years. 3 class hours. Credit, 3. Mr. Goding.

58. (II) French Literature of the Nineteenth Century (1962-63)

A study of the main genres, schools and movements after the Romantic period. Given in alternate years. 3 class hours. Credit, 3. Mr. Goding.

65. (I) Selected Masterpieces in Translation

Not open to French majors. The vision of man in French literature from the Renaissance to the XXth century. 3 class hours. Credit, 3. Mr. Smith.

75. (I) Cours de Style

An intensive course in French stylistics. 2 class hours. Credit, 2. Mr. Smith.

77. (I) The French Renaissance

A study of the major writers of the XVIth century with appropriate attention to important humanistic and artistic developments. 2 class hours. Credit, 2.

78. (II) Advanced French Studies

A special study of a French author or literary genre. Subject to be announced at the end of the preceding academic year. 2 class hours. Credit, 2.

79. (I) French Civilization (1961-62)

A course designed for an intelligent understanding of France's life and culture. Given in alternate years. 3 class hours. Credit, 3. Mr. Goding.

80. (II) Advanced Language Study (1961-62)

A thorough examination of professional requirements and needs for the teaching of French in the U. S. 3 class hours. Credit, 3. Mr. Goding.

95. (I) 96. (II) Senior Seminar

Required for seniors majoring in French. Independent work under guidance, on special problems or in certain areas of interest, including research and bibliographical techniques. Credit, 1-2.

ITALIAN

1. (I) 2. (II) Elementary Italian

For students with no previous training in Italian. Intensive practice in the language skills. No credits in this course may be applied toward a degree until the close of the second semester, except upon the special recommendation of the Provost. 3 class hours, 1 laboratory hour. Credit, 3. Mr. Franchini.

ROMANCE LANGUAGES

5. (I) 6. (II) Intermediate Italian

For students with one year of college Italian or equivalent. Training in the language skills; emphasis on speaking and understanding; readings in cultural and literary texts. 3 class hours, laboratory. Credit, 3. Mr. Franchini.

25. (I) 26. (II) Introduction to Italian Literature

Selected masterpieces of Italian literature presented integrally, in literary-historical perspective. Conducted in Italian. Either semester may be elected independently. Prerequisites, Italian 5, 6, or permission of the department. 3 class hours. Credit, 3. Mr. Franchini.

27. (I) 28. (II) Oral Italian

The oral aspect of the language: pronunciation, vocabulary building, speeches, discussions, debates. Prerequisites, Italian 5, 6, or permission of the department. 3 class hours, laboratory. Credit, 3. Mr. Franchini.

SPANISH

1. (I) (II) Elementary Spanish

For students with no previous training in Spanish. Intensive practice in the language skills. No degree credit granted until the completion of Spanish 2, except upon special approval by the Provost. 3 class hours, 2 laboratory periods. Credit, 3.

2. (I) (II) Elementary Spanish

Continuation of Spanish 1. To fulfill the language requirement, upon completion of this course most students are required to continue by taking Spanish 7 and 8. 3 class hours, 2 laboratory periods. Credit, 3.

5. (I) 6. (II) Intermediate Spanish

For those incoming freshmen and transfer students who, upon placement examination, do not qualify for Spanish 7. Training in the language skills; readings in cultural and literary texts. All students in the College of Arts and Sciences who complete Spanish 6 are then required to take Spanish 8 to fulfill the language requirement. 3 class hours, 1 laboratory hour. Credit, 3.

7. (I) (II) Intermediate Spanish

For upperclassmen who have completed Spanish 1-2, and those freshmen and transfer students who are found qualified by placement examination. Training in the language skills, with emphasis on speaking and understanding; readings in cultural and literary texts. Students completing Spanish 7 will fulfill the language requirement by taking Spanish 8. 3 class hours, 1 laboratory hour. Credit, 3.

8. (I) (II) Intermediate Spanish: Hispanic Culture

For students who have completed Spanish 6 or 7, or by special permission of the department. Continuation of language skill training, with emphasis on reading and discussion of cultural and literary texts; composition. 3 class hours, 1 laboratory hour. Credit, 3.

25. (I) 26. (II) Introduction to Spanish Literature

Selected great works of Spanish literature studied in complete text in literary-historical perspective. Conducted in Spanish. Either semester may be elected independently. Prerequisites, Spanish 8, or permission of the department. 3 class hours, discussion hour. Credit, 3. Mr. Greenfield.

ROMANCE LANGUAGES

27. (I) 28. (II) Oral Spanish

The oral aspects of the language: pronunciation, vocabulary building, speeches, discussions, debates. Grammatical elements required for correct and fluent use of American and Peninsular Spanish. Prerequisites, Spanish 8, or permission of the department. 3 class hours, laboratory. Credit 3. Mr. Wexler.

63. (I) 64. (II) Advanced Spanish Composition and Syntax (1961-62)

Syntax and idioms, and those more advanced and difficult elements which constitute stylistics. Open to juniors and seniors majoring in Spanish and to other qualified students by permission of the department. Given in alternate years. 3 class hours, laboratory. Credit, 3.

66. (II) Spanish Masterpieces in Translation

The study of those works which best reveal the character of the Spanish people, and which have made an enduring impact upon world letters. Not open to majors in Spanish nor to students who have taken or plan to take Spanish 25-26. 3 class hours. Credit, 3.

81. (I) Modern Peninsular Spanish Literature (1962-63)

Major writers of Spain of the late nineteenth and twentieth centuries. Conducted in Spanish. Given in alternate years. Prerequisites, Spanish 25 or 26 or permission of the department. 3 class hours, discussion hour. Credit, 3. Mr. Greenfield.

82. (II) Modern Spanish-American Literature (1962-63)

Hispanic-American letters of the late nineteenth and twentieth centuries. Conducted in Spanish. Given in alternate years. Prerequisites, Spanish 25 and 26 or permission of the department. 3 class hours, discussion hour. Credit, 3. Mr. Greenfield.

83. (I) Drama of the Golden Age (1961-62)

Deals primarily with the *comedia* during the period of maximum creation, 1556-1681. Conducted in Spanish. Given in alternate years. Prerequisites, Spanish 25 and 26 or permission of the department. 3 class hours, discussion hour. Credit, 3. Mr. Wexler.

84. (II) Prose and Poetry of the Golden Age (1961-62)

Masterpieces of Spanish prose of the sixteenth and seventeenth centuries, excluding the *Quijote*; development of Spanish poetry in the major poets from Garcilaso to Góngora. Given in alternate years. Prerequisites, Spanish 25 and 26 or permission of the department. 3 class hours, discussion hour. Credit, 3. Mr. Wexler.

85. (I) 86. (II) Cervantes (1962-63)

Intensive reading of *Don Quijote*, with collateral readings in other Cervantine works. Conducted in Spanish. Given in alternate years. Prerequisites, Spanish 25 and 26 or permission of the department. 3 class hours, discussion hour. Credit, 3. Mr. Wexler.

95. (I) 96. (II) Senior Seminar

Required for seniors majoring in Spanish. Independent work under guidance, on special problems or in certain areas of interest, including research and bibliographical techniques. Credit, 1-2.

SOCIOLOGY & ANTHROPOLOGY

SOCIOLOGY & ANTHROPOLOGY

Head of Department: PROFESSOR J. HENRY KORSON. PROFESSOR KING; ASSOCIATE PROFESSORS DRIVER, WILKINSON, YABLONSKY; ASSISTANT PROFESSORS CONANT, MANFREDI, LOPREATO, LOVALD; MR. VOGELFANGER.

25. (I) and (II) Introduction to Sociology

A study of the social order, and of the individual considered as a member of his various groups. 3 class hours. Credit, 3. The Department.

26. (II) Principles of Sociology

The theoretical development of major sociological concepts with emphasis on American sociologists. Analysis of monographs utilizing the sociological frame of references for selected areas. Prerequisite, Sociology 25. 3 class hours. Credit, 3. Mr. Vogelfanger.

51. (I) Urban Sociology

A study of urban American social conditions with reference to population, ecology, health, and the classically defined institutional complexes and their problems of adjustment. Prerequisite, Sociology 25. 3 class hours. Credit, 3. Mr. Lovald.

52. (II) Rural Sociology

A study of rural society from the standpoint of its population, institutions, standards of living, and their relation to urban society. Prerequisite, Sociology 25. 3 class hours. Credit, 3. Mr. Lovald.

56. (II) Race Relations

The social, economic and political aspects of racial and ethnic problems in the United States, plus briefer consideration of similar problems in Africa and Asia. Prerequisite, Sociology 25. 3 class hours. Credit, 3. Mr. Korson.

57. (I) The Family

The development of the customs of courtship and marriage of the contemporary American family. The basic causes of changes and trends of the family. Prerequisite, Sociology 25. 3 class hours. Credit, 3. Mr. King, Mr. Korson.

59. (I) Social Stratification

The factors which make for institutionalized inequality in social life. A consideration of castes and classes in American society. Prerequisite, Sociology 25. 3 class hours. Credit, 3. Mr. Lopreato.

61. (I) Population Problems

An analytical study of population composition, focusing upon the causes and consequences of changes in the basic demographic variables: fertility, mortality, and migration. Prerequisite, Sociology 25. 3 class hours. Credit, 3. Mr. Wilkinson.

68. (II) Industrial Sociology

The role, status, and function of the worker in the industrial community. A consideration of changing technology and the adjustment made in the industrial community. Prerequisite, Sociology 25. 3 class hours. Credit, 3. Mr. Korson.

SOCIOLOGY & ANTHROPOLOGY

70. Social Structure of India

The origins, distribution, and cultural traits of the major groups in India. Special attention given to marriage, family, caste patterns, and positions in the economic and political system. 3 class hours. Credit, 3. Mr. Driver.

72. (II) Social Change

A consideration of changes arising from culture contact, social reform, and technical inventions. Planned and unplanned change, particularly with respect to underdeveloped countries. Prerequisites, Sociology 25. 3 class hours. Credit, 3. Mr. King.

75. (I) Social Problems

The incidence, distribution and interrelations among the major types of social tensions in human societies. Various theories of causation. Research projects and field trips. Prerequisite, Sociology 25. 3 class hours. Credit, 3. Mr. Driver.

78. (II) Criminology

The nature of crimes and the factors underlying criminal behavior. The machinery of justice; the law, courts, police systems, and correctional institutions. Prerequisite, Sociology 25. 3 class hours. Credit, 3. Mr. Yablonsky, Mr. Driver.

82. (II) Sociological Theory

An examination of contributions of European and American writers who have concerned themselves with theories of the origin, growth, and development of human social organization. Prerequisite, Sociology 25. 3 class hours. Credit, 3. Mr. Manfredi.

92. (II) Introduction to Social Welfare

Methods of caring for adult and child dependents and defectives. Public and private agency administration and techniques. Federal, state, and local community programs. Prerequisites, Sociology 25, 75. 3 class hours. Credit, 3. Mr. Yablonsky.

95. (I) 96. (II) Seminar, Research Methods

A consideration of research methods and techniques employed in sociology. Each student is required to design and complete a research project of limited scope. Prerequisite, Sociology 25. Credit, 3. Mr. Lovald.

ANTHROPOLOGY

63. (I) and (II) Social Anthropology

An introduction to the fields of anthropology: human evolution and race; prehistory; variations among societies in kinship, economic, political and religious organizations. Prerequisite, Sociology 25. 3 class hours. Credit, 3. Mr. Conant, Mr. Wilkinson.

64. (II) Problems in Anthropology

Examination of selected problems in social structure: economic organization, kinship systems, political forms and religion of non-literate peoples. Prerequisite Anthropology 63. 3 class hours. Credit, 3. Mr. Conant.

SPEECH

65. (I) Ethnographic Survey of Non-Literate Peoples

The study of selected societies of Africa, Oceania, the Americas and Asia. Problems of comparing societies, especially with regard to their environmental contexts. Prerequisite Anthropology 63. 3 class hours. Credit, 3. Mr. Conant.

66. (II) The Individual and His Society

Selected approaches to the interrelations of individual behavior and social patterns, with consideration of data on "Western" and "non-Western" societies. Prerequisite, Anthropology 63. 3 class hours. Credit, 3. Mr. Lopreato.

67. (I) Ethnology of Africa

A limited consideration of the history, physical types, social organization and culture of Africa south of the Sahara with special consideration of several diverse cultures. Prerequisite, Sociology 25. 3 class hours. Credit, 3. Mr. Conant.

SPEECH

Head of Department: PROFESSOR ARTHUR E. NIEDECK. ASSISTANT PROFESSORS ZAITZ,* PIERCE, SAVEREID, HARPER, HEGARTY; MRS. NIEDECK, MISS ABRAMSON, MISS HANIFAN; MESSRS. STROMBERG, ANGELL.

3. (I) and (II) Oral Communication

Introductory instruction and practice in oral self-expression: literary interpretation and public speaking. 2 class hours. Credit, 2. The Department.

51. (I) and (II) Voice and Diction and Oral Interpretation

Training and drill in the correct production of speech, practice in the fundamentals of vocal interpretation of literature. 3 class hours. Credit, 3. Miss Abramson, Mrs. Niedeck.

61. (I) Fundamentals of Radio Broadcasting

A general introduction to radio broadcasting: practice in preparing, rehearsing, and producing programs of various types. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Harper.

62. (II) Advanced Radio Production

An advanced course in radio broadcasting: practice in preparing and producing radio plays and documentary programs. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Harper.

63. (I) Television Programming and Production

An exploration of the television medium for orientation in producing, directing and writing: network, local and educational operations both studio and remote. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Harper.

64. (II) Television Programming and Production

Practical television techniques from effective planning through effective execution by people off camera and on camera. Prerequisite, Speech 63. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Harper.

65. (I) Writing for Television

A consideration of television writing methods for the successful production of all types of formats. 3 class hours. Credit, 3. Mr. Stromgren.

* On leave.

SPEECH

66. (II) Film Production and Staging for Television

A study of the principles, tools and skills involved in film production. Includes 16mm film projects with practical work in shooting, screening and editing. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Stromgren.

71. (I) Scene Design and Construction

Theories and design in the modern theatre with assignments in developing stage settings from sketches to working drawing; from scenery construction to painting. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Pierce.

75. (I) Acting and Make-up

The study of emotion and imagination in acting, reading lines, rehearsing, diction, and bodily action; the study and application of the principles of stage make-up. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Niedeck.

76. (II) Stage Direction

Basic elements of play structure and the director's role: choosing scripts, organizing production staff, casting, coaching, planning rehearsals and performance. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Niedeck.

78. (II) Stage Lighting

Introduction to lighting a stage. Analysis of basic types of equipment and their application in artistic productions. Simple wiring and installations. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Peirce.

81. (I) Phonetics

A scientific study of the sounds of English; descriptive analysis of individual vowels and consonants. Study of the International Phonetic Alphabet; training in auditory discrimination. 3 class hours. Credit, 3. Miss Hanifan.

82. (II) Introduction to Clinical Practice

Training in basic diagnostic and therapeutic techniques for various speech handicaps; emphasis on articulation defects, delayed speech and stuttering. Supervised practice required. Prerequisites, Speech 81, 85. 2 class hours, 1 2-hour laboratory period. Credit, 3. Miss Hanifan.

83. (I) Anatomy and Physiology of the Speech and Hearing Mechanism

A study of the anatomy and physiology of the speech and hearing mechanism; consideration of phonation, resonance, articulation and audition. Prerequisites, Zoology 37, 38. 3 class hours. Credit, 3. Miss Hegarty.

84. (II) Audiology

A study of the symptoms and causes of hearing loss; special attention to diagnostic test procedures. Supervised practice in audiometric testing. Observation; field trips. Prerequisite, Speech 85. 3 class hours. Credit, 3. Miss Hegarty.

85. (I) Introduction to Speech Pathology

A study of the causes, functional and organic, of speech problems among children and adults; principles of diagnosis and therapy. Observation; field trips. Prerequisite, Psychology 26. 3 class hours. Credit, 3. Miss Hegarty.

VETERINARY SCIENCE

86. (II) Rehabilitation of the Acoustically Handicapped

Training in the techniques of speech therapy, auditory training, and speech reading for children and adults with hearing impairments. Laboratory practice under supervision. Prerequisite, Speech 84. 2 class hours, 1 2-hour laboratory period. Credit, 3. Miss Hanifan.

88. (II) Advanced Clinical Practice

Advanced training in clinical practice under supervision; special consideration of organic speech disorders. Prerequisite, Speech 82. 2 class hours, 1 2-hour laboratory. Credit, 3. Miss Hegarty.

91. (I) and (II) Public Speaking

The study and application of principles governing the composition and delivery of public speeches. 3 class hours. Credit, 3. The Department.

92. (II) Discussion

The study of the principles of group discussion and their application to major contemporary problems. 3 class hours. Credit, 3. Mr. Saverid.

93. (I) Argumentation and Debate

The study and application of reasoning and evidence as it is used in public deliberation. Prerequisite, Speech 91 or permission of instructor. 3 class hours. Credit, 3. Mr. Angell.

94. (II) Persuasion

Advanced study and practice in appeals to beliefs and action through extemporaneous speech. Prerequisite, Speech 91 or permission of instructor. 3 class hours. Credit, 3. Mr. Saverid.

96. (II) Seminar in Speech Pathology

Individual student reports on selected topics in the field of speech pathology. Prerequisite, Speech 85. 3 class hours. Credit, 3. Miss Hegarty.

VETERINARY SCIENCE

Head of Department: PROFESSOR GLENN A. SNOYENBOS. PROFESSOR SMITH.

75. (I) Comparative Veterinary Anatomy

The structure of vertebrates with emphasis upon the comparative structure of domesticated animals, both mammals and birds. 3 class hours. Credit, 3. Mr. Smith.

76. (II) General Veterinary Pathology

An introduction to the study of disease; application of principles to the prevention, control, and eradication of the common communicable and non-communicable diseases of farm animals. Prerequisite, Veterinary Science 75. 3 class hours. Credit, 3. Mr. Smith.

78. (II) General Veterinary Pathology

This course is similar to Veterinary Science 76 except that diseases of importance to wildlife, and diseases of animals transmissible to man will be considered. Prerequisites, Bacteriology 31; Zoology 35 or 71. 3 class hours. Credit, 3. Mr. Smith.

ZOOLOGY

88. (II) Avian Pathology

This course is similar to Veterinary Science 76 but with application to specific communicable and non-communicable diseases of poultry. Prerequisite, Veterinary Science 75. 3 class hours. Credit, 3. Mr. Bullis.

ZOOLOGY

Head of Department: PROFESSOR GILBERT L. WOODSIDE. PROFESSORS BARTLETT, SNEDECOR, TRAVER; ASSOCIATE PROFESSORS HONIGBERG, RAUCH, ROLLASON, SWENSON; ASSISTANT PROFESSORS ANDREWS, HARVEY, MONER, NUTTING, ROBERTS, SNYDER.

1. (I) (II) Introductory Zoology

Introduction to the principles of biology with special reference to the zoological aspects: protoplasm and the cell, vertebrate anatomy and physiology, embryology, genetics, principles of classification, comprehensive survey of major groups of the animal kingdom, and evolution. 2 class hours, 1 3-hour laboratory period. Credit, 3.

25. (I) Survey of the Animal Kingdom

Emphasis on such topics as adaptation, symbiosis, ecology, and evolution, and a consideration of major animal phyla which best illustrate these topics. Several field trips. Prerequisite, Zoology 1. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Nutting.

35. (I) (II) Vertebrate Physiology

Includes consideration of circulation, respiration, digestion, metabolism, excretion, chemical and nervous coordination, muscular activity, and reproduction. Prerequisite, Zoology 1. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Snedecor, Mr. Swenson, Mr. Roberts, Mr. Moner.

37. (I) 38. (II) Anatomy and Physiology

An introduction to human anatomy and physiology. The subject matter will include skeletal, nervous, muscular, cardiovascular, respiratory, digestive, excretory, endocrine, and reproductive systems. Prerequisite, Zoology 1. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Moner.

50. (II) Histology of the Vertebrates

Study of the cell, tissues, and microscopic anatomy with emphasis on the mammal. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Rollason.

51. (II) Microtechnic of Animal Tissues

A series of practical exercises employing the basic methods of preparation of tissue for microscopic examination; consideration of the principles involved in the various methods. Prerequisite, Zoology 1. 2 2-hour laboratory periods. Credit, 2. Mr. Honigberg.

53. (I) Principles of Genetics

The transmission of hereditary factors in plants and animals, expression and action of genes, population genetics, and the relationship of genetics to other biological sciences. Prerequisite, Zoology 1. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Rauch.

54. (II) Natural History

Designed to orient the student to features of sky, climate, and terrain, of importance to the teaching naturalist. Methods of identification, collecting data, etc. Prerequisites, Botany 1; Zoology 1. 1 class hour, 1 4-hour laboratory period. Credit, 3. Mr. Nutting.

55. (I) Natural History

Comparison of aquatic and terrestrial communities from the naturalist's viewpoint. Special attention given to distribution, seasonal responses, and biotic interrelationships. Prerequisites, Botany 26; Geology 27; Zoology 54. 1 class hour, 1 4-hour laboratory period. Credit, 3. Mr. Nutting.

56. (II) Natural History

Field studies of selected series of plant and animal species. Emphasis on seasonal differences in abundance, developmental stages, and response to factors of the environment. Prerequisites, Zoology 55 and permission of instructor. 1 class hour, 1 2-hour laboratory period. Credit, 2. Mr. Nutting.

64. (II) Biology of Protozoa (1961-62)

Morphology and physiology of Protozoa, with emphasis on the contributions made to the basic problems of biology through the study of these organisms. Given in alternate years. Prerequisites, Zoology 1 and permission of instructor. 1 class hour, 1 2-hour and 1 3-hour laboratory period. Credit, 3. Mr. Honigberg.

69. (I) Animal Parasitology

Representative protozoan and helminthic parasites of man and domestic animals are studied, emphasizing morphology, life cycles, and parasitism as a mode of life. Prerequisite, Zoology 1. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Miss Traver.

70. (II) Invertebrate Zoology (1960-61)

Survey of the phyla of invertebrate animals from evolutionary and phylogenetic aspects. For each phylum, representatives of the principal classes are studied. Given in alternate years. Prerequisite, Zoology 1. 1 class hour, 2 3-hour laboratory periods. Credit, 3. Miss Traver.

71. (I) Comparative Vertebrate Anatomy

A systematic approach, stressing adaptation, functional specializations and evolution. Laboratory study primarily on fish and mammals. Prerequisite, Zoology 1. 2 class hours, 2 3-hour laboratory periods. Credit, 4. Mr. Bartlett, Mr. Snyder.

72. (II) Vertebrate Embryology

The development of representative animals, special emphasis being placed on the amphibian, bird and mammal. Prerequisite, Zoology 71. 2 class hours, 2 3-hour laboratory periods. Credit, 4. Mr. Woodside, Mr. Rauch, Mr. Bartlett.

74. (II) Limnology (1961-62)

Study of inland waters from geological, physical, chemical and biological aspects. Given in alternate years. Prerequisites, Botany 1; Zoology 1; Chemistry 1, 2; and permission to register. 2 class hours, 2 3-hour laboratory periods. Credit, 4. Miss Travers, in cooperation with the departments of Botany, Entomology, Public Health, Geology, and Zoology.

ZOOLOGY

78. (II) Genetics of Animal Populations (1961-62)

Principles, basic techniques, methods, goals and contributions of population genetics; the population approach to the study of the origin of species and human genetics. Given in alternate years. Enrollment limited to ten. Prerequisites, Zoology 53 or its equivalent and permission of instructor. 1 2-hour lecture-discussion period per week. Credit, 2. Mr. Rauch.

80. (II) Ornithology

An introduction to avian biology emphasizing the correlation of structure, function and behavior; identification. Prerequisite, Zoology 1. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Bartlett, Mr. Nutting.

81. (I) Vertebrate Zoology

An introduction to the vertebrates, their classification and ecology, with particular emphasis on the fishes. Field trips for the study of local fauna. Course limited to eighteen students. Prerequisite, Zoology 1. 1 class hour, 2 2-hour laboratory periods. Credit, 3. Mr. Andrews.

82. (II) Mammalogy

Evolution, distribution, classification, and ecology of mammals. Laboratory will include field trips, preparation of study material, and identification of local fauna. Enrollment limited to 15. Prerequisites, Zoology 1 and permission of instructor. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Snyder.

83. (I) General and Cellular Physiology

The fundamental processes common to all cells. Emphasis on the physics and chemistry of single cells. Prerequisites, 1 year of Biology; Organic Chemistry. 3 class hours, 1 3-hour laboratory period. Credit, 4. Mr. Swenson.

84. (II) Comparative Physiology

Physiological principles involved in adaptations of animals to their environments; emphasis on experimental methods used to study adaptive mechanisms. Prerequisites, Zoology 1, 35 or 83. 3 class hours, 1 3-hour laboratory period. Credit, 4. Mr. Roberts.

86. (II) Fishery Biology

Theory in the practice of regulating freshwater fisheries; the physical and biological conditions of the environment and their influence on fish population. Prerequisites, Zoology 81 and permission of instructor. 2 class hours, 1 2-hour laboratory period. Credit, 3. Mr. Andrews.

87. (I) Endocrinology

The importance of the endocrines in their control over normal functions (growth, metabolism, reproduction, etc.), in a variety of animals. Prerequisite, Zoology 1. 2 class hours, 1 3-hour laboratory period. Credit, 3. Mr. Snedecor.

97. (I) 98. (II) Special Problems in Zoology

Qualified seniors who have met departmental requirements for specialization in the field of zoology may arrange for work on a special problem in zoology. Credit, 1-3.

Invertebrate Zoology, Marine Biological Laboratory, Woods Hole, Massachusetts. Credit, 3.

Invertebrate Embryology, Marine Biological Laboratory, Woods Hole, Massachusetts. Credit, 3.

INTERDEPARTMENTAL COURSES

INTERDEPARTMENTAL COURSES

Comparative Literature 91. (I) Anglo-German Literary Relationships since 1750

Study of subjects and problems common to English and German literature since the middle of the eighteenth century with some attention to German-American literary relationships. By permission may be counted for major credit in English and German. 3 class hours. Credit, 3. Mr. Heller, Mr. Page.

Linguistics 93. (I) Linguistics

A basic course combining comprehensive treatment of the field with special attention to recent contributions, particularly in structural linguistics, to the study of language and literature. By permission may be counted for major credit in English, German, and Romance Languages. Prerequisites, English 25, 26. 3 class hours. Credit, 3.

Social Science 60. (II) Africa, South of the Sahara

An introductory study of recent political, economic, and social developments in the principal countries of Africa, south of the Sahara. By permission may be counted for major credit in government and sociology. Prerequisites, at least two semester courses in one or more of the following fields: economics, government, sociology. 3 class hours. Credit, 3. Miss Carter.

Social Science 69. (I) India and Southeast Asia

An introductory study of recent political, economic, and social developments in India and the countries of South and Southeast Asia. By permission may be counted for major credit in government and sociology. Prerequisites, at least two semester courses in one or more of the following fields: economics, government, sociology. 3 class hours. Credit, 3. Mr. Driver.

University Studies: Honors 51—Junior Honors Symposium

The presentation and discussion of topics emphasizing inter-relationships of the various disciplines and selected topics in specialized subject matters. For junior honors students. Instructors: visiting lecturers. Meets once a month. No academic credit.

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UNIVERSITY OF MASSACHUSETTS ENROLLMENT — September, 1960

UNDERGRADUATE COLLEGE

CLASS	1961		1962		1963		1964		Total	
	MEN	WOMEN	MEN	WOMEN	MEN	WOMEN	MEN	WOMEN	MEN	WOMEN
Arts and Sciences	311	195	288	218	456	374	466	506	1,521	1,293
Engineering	157	0	158	1	209	1	312	5	836	7
Business Administration ..	112	8	101	5	133	14	103	12	449	39
Education	0	65	1	82	1	111	3	114	5	372
Agriculture	65	1	73	3	89	2	77	3	304	9
Physical Education	24	9	28	9	42	21	48	14	142	53
Home Economics	0	27	0	28	0	35	0	25	0	115
Nursing	0	22	0	23	0	30	0	37	0	112
Total	669	327	649	369	930	588	1,009	716	3,257	2,000
Total by Classes	996		1,018		1,518		1,725		5,257	

GRADUATE SCHOOL

MEN	WOMEN	TOTAL
600	168	768

Specials

Specials

23 51

74
5,331

STOCKBRIDGE SCHOOL

	1961	1962
Men	193	192
Women	5	4
Specials	198	196

SUMMARY

Total Undergraduate School	5,331
Graduate School	768
Stockbridge School	396
GRAND TOTAL	6,495

Office of Publications September, 1960

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For the information of those who may wish to make a gift or a bequest to this University, the following suggestion is made as to a suitable form which may be used.

There are a number of worth-while activities of the University which are handicapped by lack of funds and for which small endowments would make possible a greater measure of service to our students and to the Commonwealth. The religious work on the Campus is an example. This is now carried on in a very limited way by current private contributions. Further information concerning this and other activities in similar need will be gladly furnished by the President.

SUGGESTED FORM

"I give and bequeath to the Trustees of the University of Massachusetts, at Amherst, Massachusetts, the sum of dollars."

(1) (Unrestricted)

"To be used for the benefit of the University of Massachusetts in such manner as the Trustees thereof may direct."

or (2) (Permanent Fund: income unrestricted)

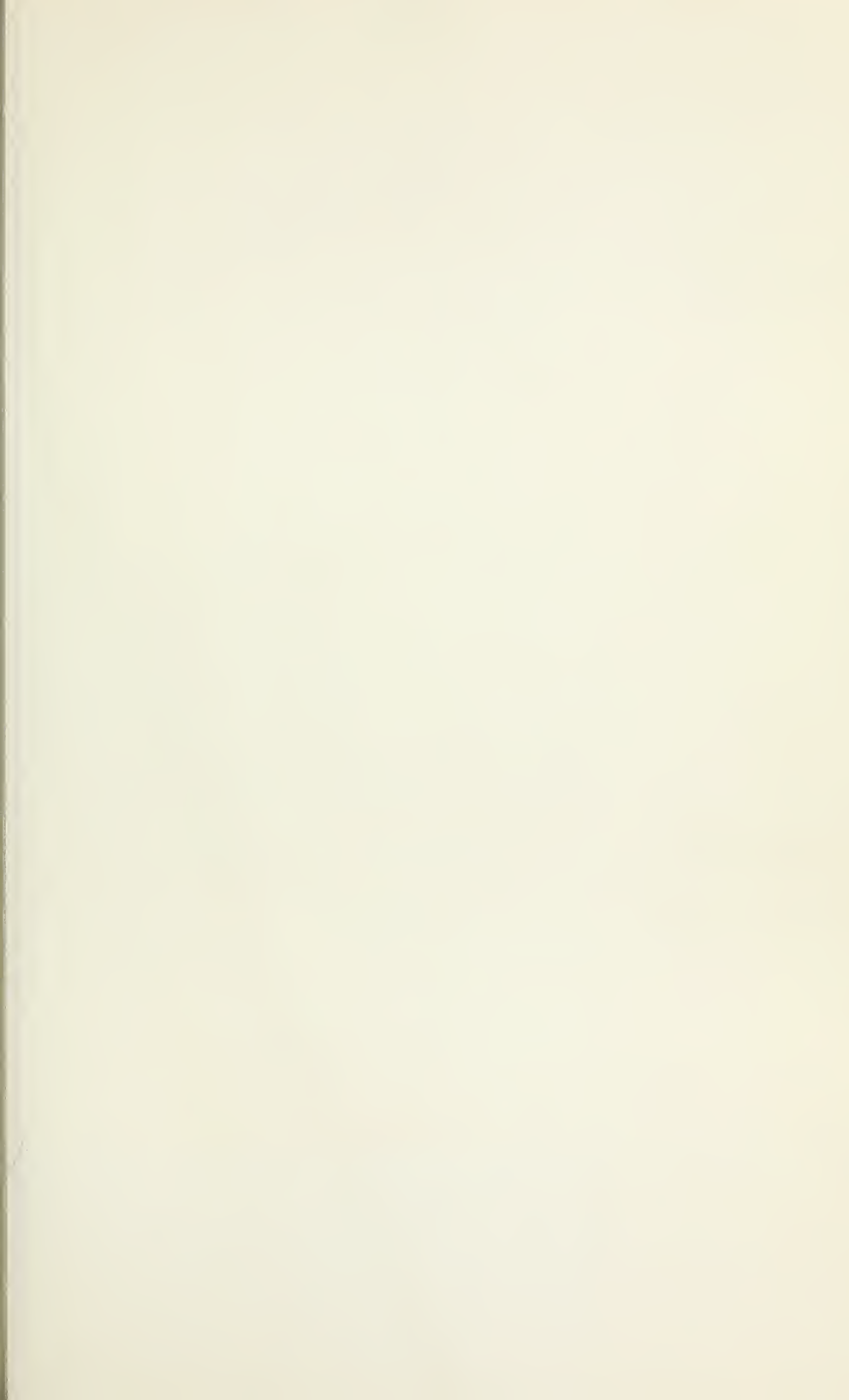
"to constitute an endowment fund to be known as the Fund, such fund to be kept invested by the Trustees of the University of Massachusetts and the income used for the benefit of the College in such manner as the Trustees thereof may direct."

or (3) (Specific Purposes)

"to be used for the following purposes,"

(Here specify in detail the purposes.)







general information

UNIVERSITY OF MASSACHUSETTS

University
of
Massachusetts
Bulletin

University of Massachusetts at Amherst



General Information Bulletin

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FOREWORD

The General Information Bulletin has been prepared for the prospective undergraduate to acquaint the student with all phases of the University of Massachusetts.

VOLUME LIII

AUGUST, 1961

NUMBER III

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CALENDAR

1961

September

- 13 — Wednesday. Registration.
- 14 — Thursday. Classes begin at 8 a.m.

November

- 4 — Saturday. Mid-semester marks close.
- 11 — Saturday. Veterans' Day. No classes.
- 21 — Tuesday. Thanksgiving recess begins after last class.
- 27 — Monday. Classes resume at 8 a.m.

December

- 7 — Thursday. Counseling Day. No undergraduate classes.
- 19 — Tuesday. Christmas recess begins after last class.

1962

January

- 3 — Wednesday. Classes resume at 8 a.m.
- 13 — Saturday. Last day of class meetings.
- 15 — Monday. Final examinations begin at 8 a.m.
- 23 — Tuesday. Final examinations end at 5 p.m.

February

- 1 — Thursday. Registration.
- 2 — Friday. Classes begin at 8 a.m.

March

- 24 — Saturday. Mid-semester marks close. Spring recess begins after last class.

April

- 2 — Monday. Classes resume at 8 a.m.

May

- 1 — Tuesday. Counseling Day. No undergraduate classes.
- 10 — Thursday. Honors Day.
- 22 — Tuesday. Last day of class meetings.
- 24 — Thursday. Final examinations begin at 8 a.m.

June

- 2 — Saturday. Final examinations end at 5 p.m.
- 10 — Sunday. Commencement.

Correspondence regarding various phases of the University program should be directed as follows:

Academic Affairs

GILBERT L. WOODSIDE, *Provost*

Admission, Registration and Transcripts

MARSHALL O. LANPHEAR, *Registrar*

Expenses, Payments

KENNETH JOHNSON, *Treasurer*

Extra-Curricular Activities

WILLIAM D. SCOTT, *Director, Student Union*

Four College Cooperation

GILBERT L. WOODSIDE, *Provost*

Graduate School

GILBERT L. WOODSIDE, *Acting Dean*

Housing

HERBERT A. RANDOLPH, *Housing Supervisor*

Loans and Scholarships

DAVID LAWRENCE, *Assistant Director of Placement*
—Men

Men's Affairs

ROBERT S. HOPKINS, *Dean of Men*

Publications, News

WILLIAM DEMINOFF, *Director of Publications and*
News Editor

Short Courses

FRED P. JEFFREY, *Associate Dean, College of Agriculture*

Stockbridge School of Agriculture

FRED P. JEFFREY, *Director*

Student Affairs

WILLIAM F. FIELD, *Dean of Students*

Student Employment

ROBERT J. MORRISSEY, *Director of Placement*
GEORGE E. EMERY, *Placement Officer*

Summer Sessions

OFFICE OF THE PROVOST

Veterans' Affairs

GEORGE E. EMERY, *Veterans' Coordinator*

Women's Affairs

HELEN S. CURTIS, *Dean of Women*

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Director of Placement		
	ROBERT J. MORRISSEY	South College
Alumni Secretary		
	EVAN V. JOHNSTON	Memorial Hall
Student Union Director		
	WILLIAM DAVID SCOTT	Student Union

UNDERGRADUATE MAJORS

College of Arts and Sciences

Art	Music
Astronomy (Four College Cooperation Program)	Philosophy
Bacteriology	Physics
Botany	Pre-Dental
Chemistry	Pre-Medical
Economics	Pre-Veterinary
English	Psychology
Geology	Public Health
German	Romance Languages
Government	Russian
History	Sociology and Anthropology
Journalism	Speech
Mathematics	Zoology

College of Agriculture

Agricultural Business	Food Technology
Agricultural Engineering	Forestry
Agronomy	Landscape Architecture
Animal Science	Olericulture
Dairy Technology	Plant Pathology
Entomology	Pomology
Floriculture	Poultry Science
Food Distribution	Wildlife Management
Food Management	

School of Business Administration

Accounting	Personnel Management and
General Business	Industrial Relations
Business Administration and Economics	Production Management
Finance	Marketing
General Management	Merchandising

School of Education

Education	Elementary Education
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UNDERGRADUATE MAJORS

School of Engineering

Chemical Engineering

Civil Engineering

Electrical Engineering

Industrial Engineering

Mechanical Engineering

School of Home Economics

Child Growth and Development

Foods, Nutrition and Institutional Administration

Pre-Research in Foods and Nutrition

Home Economics Education and Extension

Merchandising

School of Nursing

General Nursing

School of Physical Education

Physical Education for Men

Physical Education for Women

Recreation Leadership

General Information

THE UNIVERSITY OF MASSACHUSETTS is the state university of the Commonwealth, founded in 1863 under provisions of the Morrill Land Grant Act passed by the United States Congress one year earlier.

Presently preparing for the observance of its Centennial, the University is a member of the great community of Land Grant colleges and state universities serving the nation as principal resources of higher education for the country's citizenry. Incorporated as the Massachusetts Agricultural College in April, 1863, the institution was formally opened to a handful of students in 1867. Rooted in the liberal arts tradition (its early presidents were graduates of such colleges as Dartmouth, Williams, Amherst, and Harvard), it has grown steadily from the four teachers and four wooden structures available for its opening session. Reflecting the broadening interests of its students, the General Court of Massachusetts authorized a second name, Massachusetts State College, in April, 1931. Sixteen years later, in May, 1947, the institution became the University of Massachusetts.

Situated in one of the most picturesque sections of the state, the University joins with its academic neighbors—Amherst, Smith, and Mount Holyoke Colleges—in maintaining the rich tradition of educational and cultural activity associated with this Connecticut Valley region. The University's central campus consists of approximately 700 acres of land and 80 buildings. Physical growth has been carefully planned, with provisions for additional buildings and facilities to accommodate an enrollment of approximately 10,000 students within the next decade. Offering a comprehensive program of instruction and research, the University is thus the Commonwealth's major resource of public higher education dedicated to the preservation and continued development of the country's free institutions.

BRANCHES OF INSTRUCTION

The Undergraduate College

The University offers four-year undergraduate instruction leading to the following degrees: Bachelor of Science, Bachelor of Arts, Bachelor of Science in Chemical, Civil, Electrical and Mechanical Engineering, Bachelor of Business Administration and Bachelor of Vocational Agriculture.

GENERAL INFORMATION

This instruction is assigned to the College of Arts and Sciences, the College of Agriculture, the Schools of Business Administration, Education, Engineering, Home Economics, Nursing and Physical Education. The aim of the four-year course is to give as high a degree of proficiency in some particular branch of learning as is possible without sacrificing the breadth, knowledge, and training which should characterize a well-rounded college education.

The Bachelor of Arts degree is conferred upon those candidates who fulfill the requirements for this degree specified by the College of Arts and Sciences and the School of Education. The Bachelor of Science degree is conferred upon those candidates who fulfill the requirements for this degree in the College of Arts and Sciences, the College of Agriculture, the Schools of Home Economics, Nursing, and Physical Education. All graduates from the School of Engineering receive the appropriate degrees of Bachelor of Science in Chemical Engineering, Civil Engineering, Electrical Engineering or Mechanical Engineering. All graduates from the School of Business Administration receive the degree of Bachelor of Business Administration.

Special arrangements are made for some graduates of county agricultural schools and of agricultural departments of certain high schools to complete the college course with majors in agriculture or horticulture. Upon the completion of their course they are granted a Bachelor of Vocational Agriculture degree.

The Graduate School

Graduate work leading to the Doctor of Philosophy degree may be taken in the following fields: Agronomy, Animal Science, Bacteriology, Botany, Chemistry, Economics, Entomology, Food Sciences, Food Technology, Government, Plant Pathology, Poultry Science, Psychology, and Zoology.

A cooperative Ph.D. program involving Amherst, Mount Holyoke and Smith Colleges and the University of Massachusetts is also available in the biological sciences and in chemistry.

The following departments offer major work leading to a Master's degree: Agricultural Economics, Agricultural Engineering, Agronomy, Bacteriology, Botany, Business Administration, Chemistry, Chemical Engineering, Civil Engineering, Dairy and Animal Science, Economics, Education, Electrical Engineering, English, Entomology and Plant Pathology, Floriculture, Food Technology, Forestry, Geology, German, Government, History, Home Economics, Horticulture, Landscape Architecture, Mathematics, Mechanical Engineering, Olericulture, Philosophy, Physics, Pomology, Poultry Science, Psychology, Public Health, Romance Languages, Sociology, Wildlife Management, Zoology.

GENERAL INFORMATION

The general requirements of the Graduate School regarding admission, residence, credits, tuition, etc., together with specific information concerning details of interest to prospective students, are outlined in a separate bulletin, which may be obtained upon request from the Dean of the Graduate School.

Summer Sessions

An expanded summer program enables the student to earn nearly the equivalent of a full semester's work. The sessions are open to freshmen who wish to begin their college education immediately following graduation from high school. The program also serves the needs of students currently enrolled in colleges; graduate students; and professional workers seeking courses in specialized fields. A bulletin describing the entire summer program is available from the Director of the Summer Sessions.

The Stockbridge School of Agriculture

The University, through the Stockbridge School of Agriculture, provides a complete non-degree program of two-year technical and vocational courses in the fields of agriculture, horticulture and related fields.

This School was organized at the University in 1918 under the name of "The Two-Year Course in Practical Agriculture." Its purpose was to meet the demand for shorter courses in agriculture which might be taken by high school graduates who could not satisfy college entrance requirements or who were unable to take the four-year college course. In 1928 the School was given its present name in honor of Levi Stockbridge, first professor of agriculture at the University and its fifth president.

Men and women are trained primarily for the practice of farming or for jobs in associated agricultural industries. A diploma is awarded for satisfactory completion of the course.

As the two-year program is now organized, a student may choose any one of 12 vocational courses, including Animal Science, Arboriculture, Dairy Technology, Floriculture, Food Distribution, Food Management, Forestry, Fruit Growing, Landscape Operations, Poultry Science, Turf Maintenance and Vegetable Crops.

On-the-job placement training is required of all first-year students following the second semester for a period of three to five months, depending on type of employment. Wages earned can pay a large part of second-year expenses if the student is forced to economize.

GENERAL INFORMATION

Limited enrollment quotas in each major course make necessary early filing of application. No formal entrance examinations are required for non-degree short courses.

A catalogue, giving complete description of all two-year courses offered in The Stockbridge School of Agriculture, as well as full details on estimated costs, employment opportunities in each field, and entrance arrangements is available. An application form is printed in the catalogue. Write to Director of The Stockbridge School, University of Massachusetts, Amherst.

Other Non-Degree Short Courses

Other short courses, varying in length from one to ten weeks, furnish supplementary training for city and town sanitary inspectors, tree wardens and city foresters, golf course greenskeepers, and skilled workers in dairy and ice cream plants. A certificate is presented upon the satisfactory completion of the course.

Research and Regulatory Services

The University of Massachusetts serves the fields of agriculture and horticulture through its Experiment Station, which provides research and regulatory services. Experiment stations were established in all states as the need for development of practical information on subjects relating to agriculture became apparent. Through the efforts of experiment stations, a fund of scientific knowledge applicable to agriculture and horticulture has been accumulated, and research workers in the experiment stations continue to contribute this knowledge by constant research and experimentation.

At the University of Massachusetts, the Experiment Station service has expanded until it now deals with problems in the following fields of specialization: Agricultural Economics and Farm Management, Agronomy, Bacteriology, Chemistry, Dairy and Animal Science, Engineering, Entomology and Plant Pathology, Floriculture, Food Distribution, Food Technology, Forestry, Nutrition, Olericulture, Pomology, Poultry Science, and Veterinary Science. Most of the research activities at the University of Massachusetts are undertaken at the main Experiment Station at Amherst. There are, however, two substations, one at Waltham, devoted largely to the problems of horticulture as applied to olericulture, floriculture, and nurseryculture, and one at East Wareham, where attempts are in progress to solve the problems of the cranberry and blueberry growers.

GENERAL INFORMATION

In addition to the work described above, the administration of certain regulatory services, pertaining to the sale of feeds, fertilizers, and seeds and to the use of dairy glassware, is also assigned to the Experiment Station which is equipped with the necessary laboratory facilities and personnel for that purpose.

Cooperative Extension Service

The Massachusetts Extension Service conducts educational programs for adults and off-campus youth (4-H) in agriculture and home economics. These programs help people apply scientific and research information in reaching solutions to their problems. Programs are conducted with farm production, food processing, food distribution and other types of agricultural business, with homemakers and with other groups interested in family living, the development of youth, use of agricultural resources, and our rural communities.

The Extension Service is a cooperative teaching effort between the United States Department of Agriculture, University of Massachusetts and the several counties of the state. Many staff members in a wide range of fields at the University of Massachusetts participate in Extension education, as well as research and resident teaching. County Extension workers cooperate with University personnel in planning and conducting the work. A variety of educational techniques and communications media are used.

ADMISSION

Applications for admission may be obtained by writing the Registrar of the University. Candidates are advised to file their applications early in the senior year and certainly not later than March 1 of the year they plan to enter.

Qualified applicants are admitted at the beginning of the fall and spring semesters and at the beginning of the ten weeks summer session. Since there are many more qualified applicants than can be admitted, however, preference has to be given to those with the highest ratings.

All applicants for admission except veterans and candidates for the Bachelor of Vocational Agriculture degree must take the Scholastic Aptitude Test given by the College Entrance Examination Board. In addition, the University reserves the right to require three Achievement Tests administered by the same Board if the applicant's scholastic record includes several subjects below the college recommending grade of the school. Each applicant will be informed of the procedure he must follow at the time his application is acknowledged.

Methods

A. *High School Seniors*

High school seniors are advised to file their applications early in the senior year. The Scholastic Aptitude Test may be taken on any of the scheduled dates. The January date is recommended except for those applying for early acceptance. The May date is usually too late for seniors, but is appropriate for juniors taking the test for guidance purposes.

Some applicants have a definite first preference for the University and have records that deserve early consideration. Such applicants will be accepted early in their senior year under the following conditions. They must be taking the usual college preparatory course in high school and maintaining the college recommending grade of the school in all of their courses. They must take the College Board Scholastic Aptitude Test in the junior year, preferably in May, and make a score satisfactory to the University. They must indicate the University as their first preference.

Under these conditions the University will be glad to accept such students as indication of excellent achievement in high school and to reduce some of the anxiety that an applicant feels during

the senior year while waiting for action usually taken in the spring. In this way, too, the burden of multiple applications on high school principals and college admissions officers may be lessened.

B. *High Ranking High School Juniors*

Applicants who have completed with very high academic standing work through the junior year may be admitted to the University for the semester following the junior year. Such applicants must take the Scholastic Aptitude and three achievement tests given by the College Board in May of the junior year and make scores satisfactory to the University. They must be highly recommended by their high school principal. The maturity and social adjustment of the applicant will be considered along with his intellectual development. Such applicants should apply before the end of the junior year.

C. *Veterans*

Veterans are not required to take the Scholastic Aptitude Test. Instead, they must take entrance examinations in algebra, English and a College Qualification Test. These are administered by the University Testing Service in January, June and August. Information in regard to these tests will be furnished the veteran at the time he files his application for admission. "Six Months Active Duty for Training" students are not considered veterans. They must take the College Board Scholastic Aptitude Test rather than the Veterans' Examinations.

D. *Bachelor of Vocational Agriculture Degree*

Superior graduates of vocational schools of agriculture in Massachusetts and vocational agricultural departments in Massachusetts high schools may be accepted for the Degree of Bachelor of Vocational Agriculture, provided:

- a. They are unqualifiedly recommended by the Vocational Division of the Department of Education as *bona fide* Vocational Graduates with superior ranks; and
- b. That they can present at least 16 units of certified entrance credits, approved as to quality and quantity by the State Department of Vocational Education; and
- c. That they successfully pass the English and College Qualification Test administered by the University Guidance Office. Those who have had algebra will be required to include the algebra examination.

ADMISSION

E. *Transfer*

A limited number of transfers from approved colleges may be admitted. Since applicants for such transfer exceed the number that can be admitted, they are placed on a competitive basis. Ratings will be based upon high school and college records and on the College Board Scholastic Aptitude Test, which is required of all transfers. The University reserves the right to require the College Board Achievement Tests also, if the applicant's records make such advisable. Information in regard to transfer may be obtained by writing the Registrar.

At least 45 semester credits taken in residence at the University are required of all transfers who are candidates for the Bachelor's Degree.

Subject Requirements

The subjects of preparatory study required for admission call for the satisfactory completion of a four-year high school course or its equivalent and are stated in terms of units. A unit is the equivalent of at least four recitations a week for a school year. High school graduation alone is not sufficient. The applicant's record must indicate capacity for handling the quality of scholastic work which the University has established as its standard of achievement.

Sixteen units of secondary school work must be offered, selected according to the following requirements:

College Preparatory Mathematics	.	.	.	.	.	3*
English	.	.	.	.	.	4
Foreign Language (2 years of 1 language)	.	.	.	.	.	2
U. S. History	.	.	.	.	.	1
Laboratory Science	.	.	.	.	.	1

The remaining units are elective and may be selected from the following subject matter:

- a. Mathematics
- b. Science
- c. Foreign Language
- d. History and Social Studies
- e. Free electives (not more than four units)

Free elective subjects are those not included in groups a-d, as for example: Music, art, drawing, typewriting, aeronautics, agriculture, home economics, etc. Such free electives are allowed in order that the student who wishes may have some opportunity to elect other high school offerings, while at the same time covering the fundamental requirements for college work.

* Preferably two years of Algebra and one of Plane Geometry.

ADMISSION

*Students planning to major in the physical sciences and mathematics should, if possible, offer two years of algebra, one of plane geometry, and one-half year of trigonometry. Analytical or solid geometry, chemistry, and physics are also strongly recommended.

Students planning to pursue an engineering curriculum should offer two years of algebra, one of plane geometry, and one-half year each of trigonometry and solid geometry. Chemistry and physics are also advised. Those deficient in the mathematics should plan to cover it during the summer prior to entrance or expect to take five years to complete the college course.

In high schools organizing agricultural club work under the supervision and rules of the Junior Extension Service of the University, one credit is granted for each full year of work approved by state leaders.

Candidates of exceptional ability and promise may be considered for admission even though some of the prescribed courses were not included in their high school program.

College Entrance Examination Board Advanced Placement

Successful completion in secondary school of courses approved by the College Entrance Examination Board Advanced Placement Program, or the equivalent as approved by the University, will be regarded as meeting the equivalent requirement and will be accorded credit toward graduation.

Physical Examination

Physical examination by their local doctor is required of all entering freshmen, re-entering students and all students participating in athletics. Physical report forms for this examination will be mailed to each student with the bill for the first semester and must be completed and returned to the University Health Service 10 days before the opening of the semester. Evidence of a *successful* smallpox vaccination is required.

Veterans' Affairs

The Veterans' Coordinator is a member of the Placement Service. Veterans enrolling for the first time must file a Certificate of Eligibility with the Placement Office prior to or at registration. All veterans should clear their affairs through the Placement Service.

EXPENSES

University Fees

Expenses vary from approximately \$1000 to \$1200 per year for the normally economical student. First year costs are usually greater than those of the other three years and there is less opportunity to earn. A student is advised to have a definite plan for meeting the expenses of the first year before entering.

Freshmen entering the School of Engineering should be prepared to meet an expense of approximately \$45 for drawing equipment and a slide rule.

The following estimate of a year's expenses, based upon last year's costs, includes only those items which are strictly college and does not include amounts for clothing, laundry, travel, etc. These costs vary slightly from year to year. Tuition for residents of Massachusetts is \$200 per year and for others \$600.

	<i>Normal</i>
Tuition (citizens of Massachusetts)	\$200.00
Room in college dormitory or private home (approx.)	200.00
Board at college Dining Halls (approx.)	420.00*
Athletic Fee	30.00
Student Union Fee	20.00
Student Tax (approx.)	24.00
Student Health Fee	30.00
Student Health Insurance, 12 months' coverage (optional)	18.00
Books, stationery, and other supplies (estimate)	100.00
	\$1042.00

Initial Payment for Freshmen

The initial payment for first semester expenses required of freshmen at the time of fall registration is indicated below and is made up of the following items:

Tuition (citizens of Massachusetts)	\$100.00
Room rent in college dormitories (approx.)	100.00
Board at college Dining Halls (approx.)	210.00*
Athletic Fee	15.00
Student Tax (approx.)	12.00
Student Union Fee	10.00
Military Uniform Deposit (men only)	30.00
Physical Education Equipment Fee (men only)	10.00
Student Health Fee	15.00
Student Health Insurance, 12 months' coverage (optional)	18.00
Books, stationery, and other supplies (estimate)	60.00
	\$580.00

* Above plan for 7 days; 5-day plan available for approximately \$340.00 per year or \$170.00 per semester.

The above are only approximate figures. A bill will be rendered to the parent of each student prior to the opening of the University.

Tuition

As a state institution the University of Massachusetts offers a low rate of tuition to all students entering from the Commonwealth. Eligibility for admission under the low residential rate is determined in accordance with the following policy established by the Board of Trustees.

A student must present evidence satisfactory to the Treasurer of the University that his domicile is in the Commonwealth of Massachusetts in order to be considered eligible to register in the University as a resident student. This means that he must have established a *bona fide* residence in the Commonwealth with the intention of continuing to maintain it as such.

The domicile of a minor shall follow that of the parents unless such minor has been emancipated. In case of emancipation the student, in addition to the requirements of these regulations, respecting residence, shall present satisfactory proof respecting emancipation. Minors under guardianship shall be required to present, in addition to the certification of the domicile of the guardian, satisfactory documentary evidence of the appointment of the guardian.

No student shall be considered to have gained residence by reason of his attendance in the University nor shall a student lose residential preference during his continuous attendance at the University.

The residence of a wife shall follow that of the husband.

The prescribed form of application for classification as to residence status must be executed by each student. Misrepresentation of facts in order to evade the payment of out-of-state tuition shall be considered sufficient cause for suspension or permanent exclusion from the University.

Discretion to adjust individual cases within the spirit of these rules is lodged with the President of the University.

Board

The University provides three dining halls for students at Butterfield House, Greenough House and University Dining Commons. The dining halls at Butterfield and Greenough dormitories are intended primarily to provide for students housed in that area, including residents of Chadbourne, Mills and Brooks Houses.

All freshmen, sophomores and juniors residing in University dormitories will be required to board at University dining halls,

EXPENSES

except that such students who are members of fraternities or sororities are permitted to board at their respective fraternities or sororities.

Any student who wishes may board at University dining halls on the ticket plan or cash basis.

Military Uniform

All freshmen students taking military drill are required to make a deposit of \$30 for the uniform at the time the first semester bill is paid. Charges for loss or damage of the government issued uniforms will be deducted from this deposit. Should the amount on deposit drop below \$20, because of charges, the student will be required to make additional deposit to restore the balance to \$30. The deposit will be refunded to the student less any charges after clearance from the Air Force or the Army after the student has completed the requirements of the basic course, has been excused from the course or has left the University.

Student Activity Tax

This tax, authorized by vote of the undergraduate students with the approval of the Board of Trustees, provides each student with the *Collegian*, the student newspaper; *Index*, University yearbook; student government, class and other activities.

PAYMENTS

Advance Payment

New students will be expected to make an advance payment of \$15 to the Treasurer of the University as soon as they are notified by the Registrar that they are accepted for admission. This will be considered as first payment on registration fee, which will be due at time of matriculation in September. It is not refundable and will be considered as payment for admissions and registration expense if the student does not matriculate.

A Certificate of Residence form furnished by the University must be properly filled out by the parent and the town or city clerk and returned with the \$15 advance payment.

Summer Orientation Fee

Members of the incoming freshman class attending the summer orientation program will pay a non-refundable fee of \$15 to cover the cost of meals, housing, testing and counseling.

When Payments Are Due

In accordance with policy established by the Board of Trustees, all charges for tuition, fees, board, and room rent in University Dormitories are due and payable seven days prior to the date of registration of each semester. Bills will be rendered in advance and payment may best be made by mail. Students may not register until registration charges are paid.

Veterans' Information

Veterans who are entering the University for the first time must present a Certificate of Eligibility at registration. This may be obtained from your nearest Veterans Administration office. Board and room fees must be paid in advance whether the veteran is enrolled under the G.I. Bill or not.

Veterans who are transferring to the University of Massachusetts from another institution or who have done summer work at another institution will be required to submit a supplemental Certificate of Eligibility at registration. This may be obtained by applying through the veterans' office at the institution last attended.

FINANCIAL AID

Scholarships, loans, and part-time employment are available for a limited number of needy and deserving students.

A pamphlet on Financial Aid for Students at the University of Massachusetts is available upon request from the Placement Service.

Aid for Freshman Year

Freshmen are eligible for scholarships and part-time employment and may apply for a National Defense Student Loan. A freshman also becomes eligible for assistance from other loan funds after satisfactorily completing one semester of academic work. However, freshmen are advised to have sufficient funds for the beginning semester so that they may concentrate on making satisfactory social and academic adjustment. Scholarship application blanks may be secured from the Placement Service and should be filed by March 15. Part-time employment application forms may be obtained from the Placement Service and filed after a candidate has been accepted for admission. Unless extreme need prevails, freshmen will not be granted part-time work the first semester. Those allowed to work should plan to spend no more than ten hours per week on such work. (See page 24 for further information on Scholarships and Loans.)

SCHOLARSHIPS AND LOANS

Scholarships are awarded only to needy and deserving students of high character whose habits are economical and whose scholastic records are satisfactory; that is, at least a 2.5 quality point average. A limited number of scholarships are available to entering freshmen who have made outstanding records in high school.

Scholarships are paid in installments at the beginning of each semester in the form of a credit on the student's bill. A scholarship may be discontinued at the close of any semester.

If the scholarship student withdraws from the University, any refund of University fees or charges must first be applied to reimburse the scholarship fund for the full amount of the scholarship received by the student for the semester.

Applications for scholarships may be obtained from the Placement Service and must be completed and returned by March 15 to be considered.

GENERAL SCHOLARSHIPS

COMMONWEALTH SCHOLARSHIPS. The Commonwealth of Massachusetts annually provides 25 scholarships of not more than \$250 for members of each of the four undergraduate classes of the University. Upperclass students may obtain application forms from the Placement Service. Entering freshmen may obtain application forms at the Registrar's Office.

LOANS

Through the generosity of friends of the University, funds have been donated to provide loans for a limited number of students of the three upper classes to assist in paying tuition or other college expenses. These loans are granted, after proper consideration, to needy students of good scholarship whose habits are economical. All loans are secured by a note endorsed by a responsible party as collateral. In general, loans must be paid before graduation. Upon On most of the funds, interest is charged at the rate of 3% to maturity and 5% thereafter. The Lotta Crabtree Agricultural Fund loans are made without interest. Application for loans should be made to the Placement Service, Machmer Hall. No loan under this plan will be granted in excess of \$200 in any one year.

If funds are available at the beginning of the second semester, loans may be made in exceptional cases to members of the freshman class whose scholastic record is satisfactory and whose budget calculations have been upset through circumstances beyond their control.

Higher Education Loan Plan

Loans up to \$500 per year may also be obtained by students in the three upper classes from the bank of their choice through the Higher Education Loan Plan. Certification of attendance and other information relative to the student's overall record will be submitted to the bank prior to receipt of the loan. Further information can be obtained in the Placement Service.

National Defense Student Loan Program

Students may borrow up to \$1000 per year under this program. Interest at 3% starts one year after completion of the program and is repayable within 10 years. Special consideration in the granting of these loans is given to needy students of superior scholarship who are majoring in engineering or a physical science, studying a modern foreign language, or planning to teach in a public school. Because of the small amount of money available, this is necessarily a limited, selective program. Further information and application forms may be secured from the Placement Service.

UNIVERSITY REGULATIONS

Freshman Orientation Program

Members of the incoming freshman class are required to attend a summer orientation program of two and a half days. This is a period of testing, counseling and pre-registration. A series of guidance and placement tests will be given and then scored. The student will be assigned to a faculty counselor who will help him select his courses for the fall semester and plan his schedule of hours.

If a student is given advanced placement by a placement examination or by some other means, and if he completes the advanced work (the next course if the courses are in sequence) with a grade of C or better, he will be given credit toward graduation but no grade for the omitted work; if the grade in the advanced work is D, he will be considered to have completed any requirement represented by the omitted work but will not receive credit for the omitted work. Credit with no grade awarded in this manner will be treated as transfer credit in the computation of quality-point averages.

A special program for parents is arranged for the final day of the session at which time they learn about the tests and the results, the student's proposed courses and schedule for fall semester, and the facilities and opportunities at the University.

Enrollment Regulations

A. Pre-Registration

Every student must report for pre-registration on the appointed day. Late pre-registrants will be charged a fee of \$5. A student who does not pre-register is not assured admission into the next semester.

B. Registration

Each student must report for registration on the appointed day. Late registrants must pay a \$5 fine.

C. Course Changes

No course will be recorded on the permanent records of the University nor will a student receive credit for it unless he has registered for such a course in accordance with established procedure on a regularly scheduled registration day or unless his registration shall have been made official by the signature of the Registrar. In the latter case a Program Change Card must be signed by the student's adviser and the Registrar approving the course, and by the instruc-

tors of the courses to be dropped and added. No instructor should allow a student to enter his class unless the student was officially enrolled on a regularly scheduled registration day or submits such a Program Change Card authorizing his admission to the class.

A student may not drop a course without the approval of his adviser and the Registrar on a Program Change Card and the release of the instructor. A course dropped without this approval will be recorded as a Failure.

Advisory System

In order that from the day he enrolls the freshman may have some one to whom he may go for consultation and assistance, each student is assigned to a faculty adviser at the time of registration. It is the function of this adviser to help the student in adjusting himself to the work and life of the University. Academic progress reports issued by the Registrar's Office are sent to the advisers periodically, and the students are expected to report to their advisers from time to time to discuss their academic standing. The University also forwards reports of academic standing to the parents. Both students and parents are encouraged to consult with the adviser whenever there are problems regarding studies or personal adjustments to college life.

In the second semester of the freshman year each student will discuss his vocational and specialization plans with his adviser. If he can decide definitely upon the department in which he wishes to specialize, and the adviser approves, the student takes his election card to the head of that department for approval. In cases where students are not ready to designate a department of specialization they continue as general majors during the sophomore year under the direction of an adviser assigned by the head of the School in which the student is enrolled. Such general majors must select their field of specialization by the end of the sophomore year.

Standards of Conduct

The customary high standard of college men and women in honor, self-respect, and consideration for the rights of others constitutes the ideal of student conduct.

The privileges of the University may be withdrawn from any student at any time if such action is deemed advisable.

It should be understood that the University, acting through its president or any administrative officer designated by him, distinctly reserves the right, not only to suspend or dismiss students, but also to name conditions under which they may remain in the institution.

Hazing in the sense of the punishment or humiliation of students is not permitted.

Student Housing

It is the policy of the Board of Trustees that all men and women undergraduate students shall be housed in campus dormitories and be required to eat at University dining halls unless given permission

REGULATIONS

to commute from their parents' home or to live at sorority or fraternity houses. University board is optional for seniors and is available on a cash basis. Sororities and fraternities may furnish regular board to members up to the approved capacity for each house.

Students who are assigned to housing operated by the University are expected to remain in occupancy for the academic year and may not be released sooner except as their places are taken by suitable substitutes.

The University of Massachusetts reserves the right to change room assignments whenever necessary.

Most dormitory rooms are double and are furnished with beds, mattresses, pillows, desks, chairs, and a chest of drawers. Students care for their own rooms and are responsible for any damage.

Dormitories will be open for occupancy on the day immediately preceding the opening of the University.

All student property must be removed from the rooms and the key turned in immediately after final examinations in June. Such property not removed by the owner will be removed by the University and stored at the owner's expense.

Students assigned to dormitory rooms will be responsible for the room rent of the entire semester. Room rent is not refundable.

Room rental charges do not include the several regular school vacation periods. The University reserves the right to utilize student rooms during vacations for conferences and other groups which meet occasionally on the campus.

Rooms for Women Students

Assignments of rooms in women's dormitories are made by the Office of the Dean of Women. Rooms are available for women students at Arnold, Crabtree, Dwight, Hamlin, Johnson, Knowlton, Leach, Lewis, Mary Lyon, and Thatcher Houses.

Under the supervision of the Dean of Women, life in each dormitory is directed by a council of student leaders, advised by a full time head of residence, so that conditions in the residence halls are conducive to study and good living habits. Through the women's branch of the Student Government, the responsibility is put upon each student to live according to her own best standards as well as according to the standards of the group.

Freshman girls will be assigned rooms in the dormitory and will be notified of the assignment prior to the beginning of college.

In the spring of each year, upperclass women have an opportunity to choose rooms for the coming year.

Only students living in their own homes may commute. Upperclass women may apply to the Dean of Women for permission to live in a sorority house, or to earn room and board in a private home.

Dormitories are maintained for undergraduates; graduate women from other countries are also accommodated whenever possible.

REGULATIONS

The Dean of Women's Office maintains a list of rooms in Amherst available for graduate women students.

Rooms for Men Students

Dormitory rooms are available for male students at Abigail Adams, Baker, Brooks, Butterfield, Chadbourne, Greenough, Hills, Mills, Van Meter, and Wheeler Houses.

Assignment of dormitory rooms is under the supervision of the Housing Office. Requests for permission to live off campus must be made in writing to the Dean of Men.

A full-time Head of Residence who is a member of the professional staff of the Dean of Men's Office is in charge of each dormitory. While these Heads of Residence are responsible for the enforcement of University rules and regulations, their primary concern is to counsel students. In each dormitory they are assisted by Floor Counselors in maintaining good living and study habits.

Dormitories are governed by an elected Student House Council, advised by the Head of Residence, a procedure which gives the students valuable training in dealing with the problems of group living.

Apartments for Married Students

The University operates 165 apartments for married students and junior faculty. Although it cannot guarantee housing for all married students, every effort will be made to assist in locating housing either on or off campus. Campus housing assignments are under the direction of the Housing Office and all inquiries should be addressed to that office.

Automobiles

Only members of the senior class, students 21 years old or over, and commuters are permitted to have automobiles or other types of automotive equipment on the campus or in the Town of Amherst. Vehicles must be registered with the Campus Police. Driving to and from classes is not permitted. Exceptions may be made in the case of an individual who has a severe physical limitation. Requests for such exceptions must be made through the University Health Service.

GENERAL SERVICES

University Library

The University Library now consists of the Goodell Library built in 1935 together with a new library addition of seven floors completed in September 1959 which is twice the size of the original library building. The library complex will provide space for the future expansion of the book collection to 460,000 volumes. Seating capacity is provided for 1350 readers and includes special study areas and reading rooms.

The present book collection numbers 228,450 volumes in the University Library and the 30 departmental and laboratory libraries. Facilities in the University Library include rooms for reference materials and current periodicals, a rare book room, an extensive microfilm collection, microfilm reading units, a map room, an exhibition area, and a typing room for researchers. The University Library is also a depository for the publications of the United States Government as well as the State Agricultural Experiment Stations.

Hampshire Inter-Library Center

The University Library is a participating member of the Hampshire Inter-Library Center, a cooperative facility for the acquisition, storage and servicing of research materials, especially journals, documents and reference sets. Incorporated in 1951 to augment library resources in the area, HILC is jointly operated by the four Connecticut Valley colleges—Amherst, Mount Holyoke, Smith, and the University of Massachusetts. The collection now numbers about 18,000 volumes. It is located on the second level of the new addition to the University Library.

Religious Activities

The University is concerned in an age of anxiety with the needs for spiritual undergirdings for the educated man. In this day of uncertainty, such concern for the affairs of the spirit has an equal prominence with searching for scientific truths and knowledge in human relations.

The University gives support to the religious life of its students in various ways. It affords the use of University facilities for student groups of all faiths. It cooperates with the official agencies of the three faiths most largely represented at the University by recogniz-

GENERAL SERVICES

ing the contributions of their privately supported chaplains and by giving them facilities and privileges for their work.

On the campus, the religious life of Catholic students is enriched by the program of the Newman Club, of which Rev. David J. Power is chaplain and Rev. J. Joseph Quigley is assistant chaplain. Jewish students participate in services and activities sponsored by the B'nai B'rith Hillel Foundation, of which Rabbi Louis Ruchames is the director. Protestant students join in worship and other religious activities planned by the Christian Association, with the guidance of Rev. Albert L. Seely, Protestant chaplain, and Rev. Russell G. Claussen, assistant Protestant chaplain.

Other religious groups such as the Massachusetts Bible Fellowship, the Orthodox Club, the Christian Science Organization, and the Lutheran Club also meet regularly on campus and students interested in their programs are welcome to attend.

The local Protestant and Catholic churches of Amherst provide opportunities for Sunday worship, and Sabbath services for Jewish students on Friday evenings are held at the Student Union. Students are encouraged to attend the services of their respective faiths. Several denominations sponsor active student programs centered in the local churches as well, and students are welcome to attend events and join groups sponsored by the denominations.

Health Service

The Health Service is devoted to the promotion of optimum health among members of the University community. Its concern is for the total health of individuals and groups, as reflected in the need for complete physical, mental and social well-being.

The work of the Health Service in caring for the needs of students will be made more fruitful in the fall of 1961 when headquarters will, for the first time, be located in the new Infirmary. The building will contain an out-patient department with offices and examining facilities for adequate care of ambulatory patients. In addition, there will be 88 beds available for care of students whose needs are best met by hospitalization. X-ray, laboratory, and physiotherapy facilities will be available to help in reducing time lost by students for reasons of health.

Recognition of the specific emotional needs of students in an educational environment has led to the provision of an active psychiatric program. Diagnostic and limited treatment consultations are available as part of the Health Service program. Other consultation services can be arranged as needs arise. Hospitalization for conditions requiring more specialized care than is available in the Infirmary can be arranged at the Cooley Dickinson Hospital in Northampton.

GENERAL SERVICES

The Health Service works closely with the School of Physical Education in adapting the facilities of the School to the individual needs of students for restricted or remedial activity. The health status of participants in the athletic program, both intramural and intercollegiate, is under Health Service supervision; and care is always available for any injuries resulting from these activities.

The Health Service also has an active concern for matters of sanitation and safety which affect the health of students, faculty, employees, and visitors. A physician is always on duty at the Infirmary, or on call, to attend emergency needs among families, visitors, and members of conference groups as well as regular members of the University community.

Students are urged to consult a member of the Health Service staff as soon as any indication of a physical or emotional disorder is evident. It is much easier for the staff, and less time-consuming for the student, to rectify minor difficulties before they have become sources of disability.

Students who are under medical supervision prior to entrance are urged to have their physicians write the Health Service, giving reports and instructions in appropriate detail. Every effort is made to continue treatment without interruption. In brief, the Health Service attempts to provide all students with a co-ordinated and comprehensive program of health supervision formerly provided by their family physicians.

Speech and Hearing Clinic

A Speech and Hearing Clinic is maintained to assist students with speech and hearing problems. Professional services are provided by qualified speech and hearing therapists. Opportunity for assistance is available for students with various problems including stuttering, articulation problems, foreign dialect, voice disorders, and hearing loss. Interested students may contact the Speech Department for an appointment. Appointments will also be made for students recommended by advisors and faculty members. There is no fee for services.

The Placement Service

The University maintains a centralized Placement Service, the main function of which is to assist students to secure part-time or summer positions and permanent employment following graduation.

The University is keenly interested in each graduate's having an

GENERAL SERVICES

opportunity to serve effectively in an occupation consistent with his interests, abilities, aptitudes, and education. To assist students in accomplishing their objectives, the following aids are available: cumulative student personnel records, occupational information and industrial literature library, counseling and guidance in job hunting techniques, preparation of credentials and personal data sheets. Also, personal interviews on campus are arranged with prospective employers.

The Placement Service is the clearing center for all part-time jobs at the University. Students are assisted in obtaining part-time work during the college year and full-time work during the summer vacation. Employment is not guaranteed, but every effort is made to help those students who must work to meet their college expenses. In order to give assistance to as many needy students as possible, the maximum financial aid per student is limited to the equivalent of board. The average earnings of students engaged in part-time work is approximately \$150 per year.

The granting of loans, awarding of scholarships, liaison in veterans' affairs and the military draft are also functions of the Placement Service.

Publications and News Office

The University recognizes its obligation to provide the public with accurate information about its educational program. With rising public interest in higher education, news of the University is sought by all communications media, including the daily and weekly press, radio and television.

In addition to providing information through mass media, the Publications and News Office maintains contacts with institutions of higher learning throughout the country through exchange of information in professional journals and publications of educational societies.

Daily training in news writing is provided for a limited number of students who report on University activities and prepare copy for general news releases.

The catalogues describing various phases of the academic program of the University are edited in the Publications and News Office.

Audio-Visual Center

The Audio-Visual Center is organized to help the professional staff through the use of audio-visual materials. The Center has a library of about 1,000 motion picture films; filmstrips; and 2 x 2 slide sets. All major types of audio-visual machines are available

GENERAL SERVICES

for short-term use in classroom teaching. The Center maintains a photographic service for the preparation of technical pictures and 2 x 2 slides. Assistance is available in the preparation of instructional graphic materials, such as charts, graphs, maps and diagrams.

Bureau of Government Research

The Bureau of Government Research was established at the University of Massachusetts in 1955. The Bureau is staffed by professional personnel experienced in local government research. Its work consists of research in governmental problems, publication of studies in public administration, conducting training institutes for public officials, providing consultative services to cities and towns, and the maintenance of a research library.

Alumni Association

The Associate Alumni is the general alumni organization of the University of Massachusetts. The association maintains headquarters at Memorial Hall, erected by alumni and friends in honor of those men of the University who died in World War I.

The association publishes a magazine, *The Massachusetts Alumnus*, as the alumni publication of the University.

According to its by-laws, the corporation is constituted for the purpose of promoting the general usefulness of the University of Massachusetts; of cultivating among its graduates and former students a sentiment of mutual regard; and of strengthening their attachment to their Alma Mater.

Under sponsorship of the University of Massachusetts Building Association, composed of alumni who volunteered their services, 18 dormitories, two faculty apartment centers, and a Student Union Building have been constructed on the campus.

The governing body of the Associate Alumni consists of its officers and a board of directors. Four directors are elected each year and serve a term of four years. All graduating seniors become members of, and contributors to, the association at graduation, according to a tradition set by the Class of 1940.

The Association also publishes a supplementary *Newsletter* for alumni in addition to a quarterly *Newsletter* for parents.

The Student Union

The Student Union is the community center for all members of the University family—students, faculty, administration, alumni, and guests. It is not just a building: it is an organization and a

GENERAL SERVICES

program which together constitute a well-defined plan for a fruitful community life on campus.

Constructed in 1957 by the University of Massachusetts Building Association, the Union is the center not only of major social activities, but also of many other organized endeavors forming an important adjunct program in the general educational process of the University as a whole.

Thus, the Union houses the offices of the Student Activities staff, student publications, the Chaplains, the University Conference Coordinator, and the Student Senate. Service departments of the Union include: the University Store, carrying a complete stock of books, supplies, and other items; the Union Food Service, providing snacks or catered meals; the Games Area, with bowling, billiards, table tennis and other facilities; the six-chair Barber Shop; and the Lobby Counter, the Union's general service facility (newspaper stand, box office, check-cashing service, record lending library, and information desk).

Three large lounges—the Cape Cod, Colonial, and Governor's—are available for reading and conversation. There is also a Music Room, for listening or piano practice; a Reading Room, containing home-town newspapers and periodicals; and ten Meeting Rooms for use by campus organizations.

Extra-curricular activities are selected, planned and executed by the Student Union Program Council and committees. These groups are composed of interested volunteer students, and their activities are coordinated by a full-time Program Coordinator.

The construction cost of the Student Union is being defrayed by a Student Union Fee of \$10 per student per semester. The excess of student fees over the bond schedule, plus revenue earnings, compose the operating fund for the Union building.



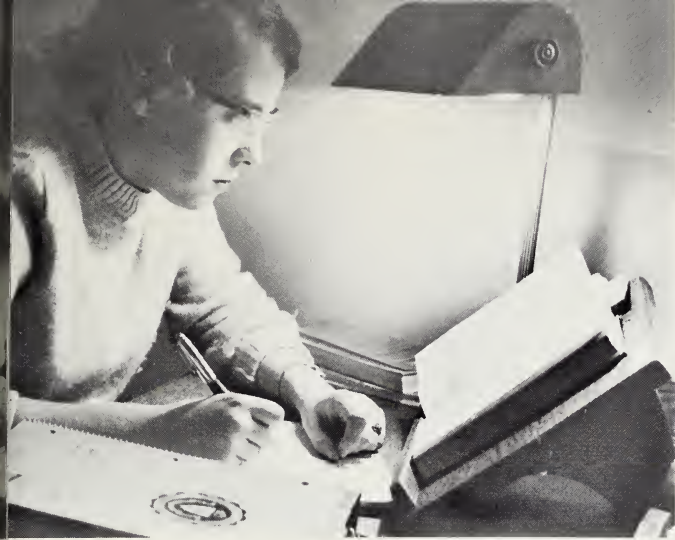
What Is a University ?

Faculty . . . Students . . . Buildings



The Library

. . . resource center



. . . for all who wish to learn





... relaxing and studying

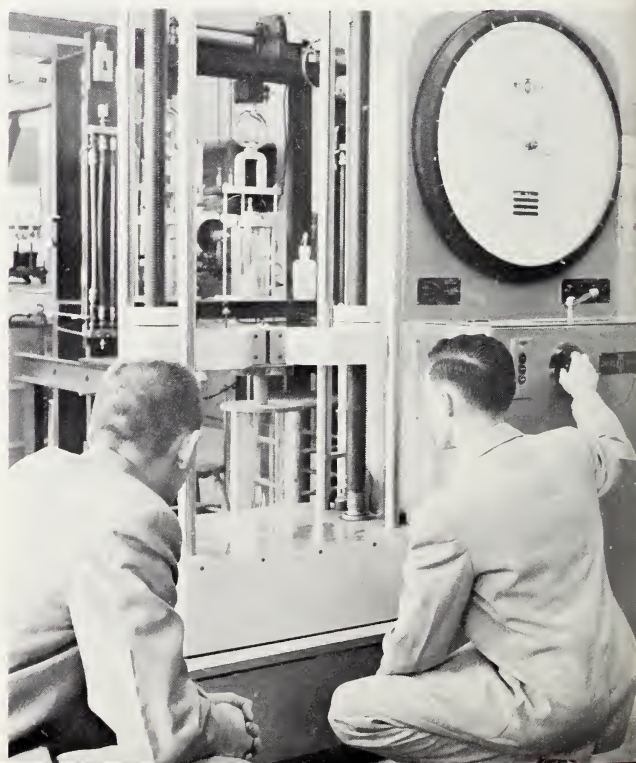






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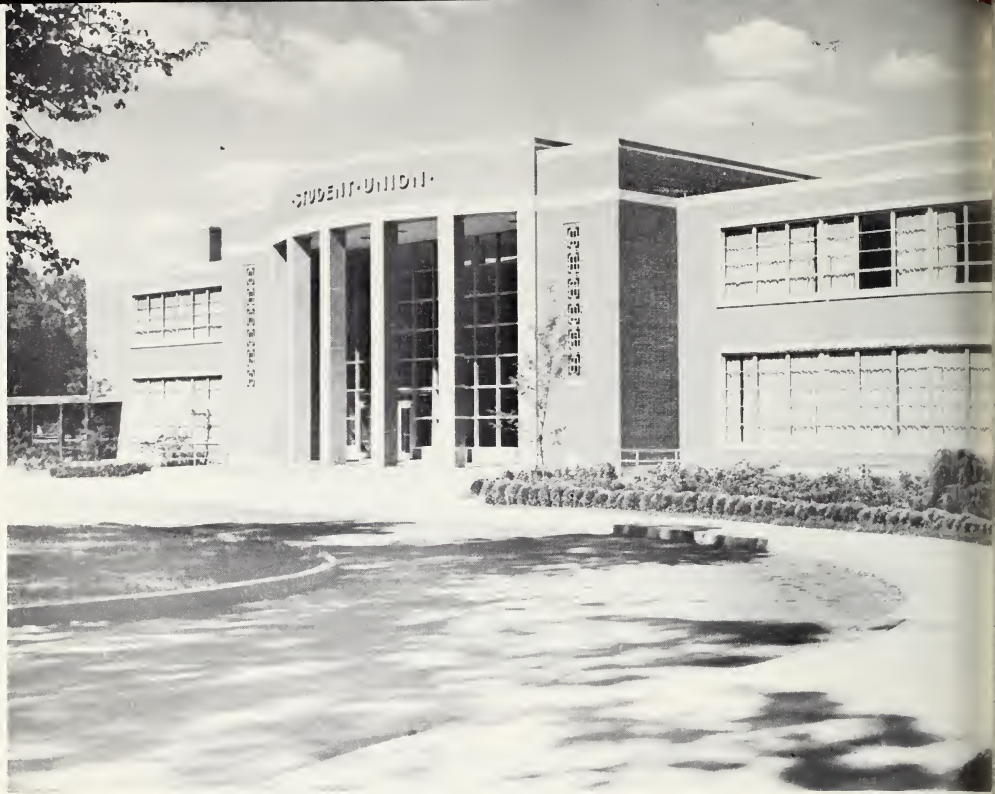




... the search continues

... in the classroom





Student Union

**... campus center for
recreation and
extra curricular activities**

SPECIAL PROGRAMS

Distinguished Lectureships, Seminars, Colloquia

Each year the University brings distinguished personages to the campus to lecture on topics of major significance in the arts, sciences, public affairs, and other areas of human concern. Each talk is given either as a single public lecture or as part of a program of panel discussions and lectures sponsored by a University group for public presentation. Included in the yearly schedule of such events are the Alumni War Memorial Lectures; the University of Massachusetts Assembly lectures and seminars; public lectures of the University's Distinguished Professors of Public Affairs; panel discussions and talks delivered during International Weekend; and the Phi Kappa Phi and Sigma Xi lectures. In addition, individual departments sponsor continuing programs of extra-curricular lectures, seminars and colloquia for the benefit of majors in those departments as well as for other interested persons.

Recognizing that a comprehensive education is not sustained through curricular experience alone, the University urges all of its students to attend as many of the extra-curricular lectures as they possibly can. Students undertaking honors work or participating in the Dean's Scholars program are informed of forthcoming lectures through an Honors Council newsletter. The student body at large is kept informed of such events through notices in the college newspaper as well as through posters, class announcements, and other means. The entire program is directed towards giving students fresh perspectives and a broader experience than that afforded by the University curriculum alone.

Four College Cooperation

Amherst, Mount Holyoke, and Smith Colleges and the University of Massachusetts have for some time combined their academic activities in certain selected areas for purposes of extending and enriching their collective educational resources. Under this cooperative program, a student in any one of the four institutions may enroll in courses given at the other three if he has the necessary qualifications and the approval of the Dean or Provost of his own institution.

Catalogues of the courses offered at the other institutions are at the loan desk in each library and in the offices of all chairmen of departments. Application blanks and transportation information are available at the University in the Office of the Provost. Requests

SPECIAL PROGRAMS

are usually made for advanced courses in the student's major subject and are normally granted only to students in good standing.

The oldest and perhaps most important of the Four College cooperative ventures is the Hampshire Inter-Library Center, a separate legal entity with a Board of Directors composed of the four Presidents, the four Librarians, and representatives from each of the Faculties. HILC is a depository for research materials and learned periodicals of a kind and in a quantity well beyond the reach of any one of the four libraries operating independently. The Center is now located on the University campus in the new addition to Goodell Library.

An FM radio station, WFCR (88.5), is similarly a Four College activity, operating as a legal entity under a Board of Directors made up of representatives of the four institutions. Other cooperative activities, all designed to give added strength in one way or another to each institution, include: a joint astronomy department; new courses in the history of science; new courses in non-Western studies, financed for three years by the Ford Foundation; a Ph.D. program; a Film Center; a common calendar of lectures and concerts on all four campuses; and a committee on transportation. Additional cooperative projects are in the planning stage. The entire program is under the supervision of a Coordinator who is a member of the administration of all four institutions.

New England Regional Program

The University participates in a cooperative program conducted by the six New England state universities under auspices of the New England Board of Higher Education. Under this program, a student wishing to pursue studies in a major field not offered at his own state university may attend another New England state university at the in-state tuition rate. Information about the program is available in the Office of the Provost.

Humanities Center for Liberal Education

The offices of the executive director of the American Humanities Center for Liberal Education are maintained in South College. This is a national agency fostering strengthened relationships between the liberal arts and sciences and the world of affairs and action.

The American Humanities Seminar, under the auspices of the University and the Center, is held annually on campus. It seeks to strengthen cooperation among the liberal arts and sciences and the technological fields.

PROGRAM FOR SUPERIOR STUDENTS

The University provides superior students with challenging educational opportunities beyond those normally encountered in the regular four-year curricula. A flexible program of honors work, intended to develop and expand the potential of academically gifted students, is offered in the following areas.

Early Admission

The University will consider applications for admission to the freshman class from students of high standing who have completed their junior year of secondary school and who qualify by letters of recommendation, examinations, and personal interview.

Advanced Placement

The University grants advanced standing and college credit to entering students who have successfully completed certain college-level courses in their secondary schools as a part of the College Entrance Examination Board Advanced Placement Program or an equivalent. The University also administers a number of advanced placement tests to entering students enabling them to be placed in more advanced courses. Upon obtaining satisfactory standing in many of these courses, students will be granted academic credit for the courses bypassed.

Waiver of Requirements and Prerequisites

For students who, through tests, can prove proficiency in the skills and subject matter of the course to be waived.

Credit by Examination

Up to thirty semester hours of credit may be granted students of high standing who can fulfill the requirements of some of their courses through independent study.

Dean's Scholars: Freshmen and Sophomores

On the basis of their academic rank in secondary school, results in aptitude and achievement examinations, and their standing at the end of their first semester or year of college work, up to ten per cent of the students in the freshman class and fifteen per cent of the students in the sophomore class may be designated Dean's Scholars.

PROGRAM FOR SUPERIOR STUDENTS

These Scholars are accorded a number of privileges, including the right to participate in the Honors Colloquia.

Senior Departmental Honors

Departmental Honors are designed to recognize merit and give highly qualified students time and opportunity for independent study under closer, more personal direction than is ordinarily provided in the University curriculum. Such study shall be devoted to a careful exploration of some question, problem or theme of significance within the student's major field. The ultimate aim of Departmental Honors is to afford talented students maximum freedom to develop their powers of initiative and resourcefulness and greater freedom to make at least a beginning in original, contributive research. To be eligible for admission to Departmental Honors, a student should have a scholastic record of 3.0 or higher for the first five semesters of college work and demonstrate outstanding promise in his major field. In exceptional cases students who have averages lower than 3.0 but show unusual aptitude for independent work may be accepted if a written statement establishing this is presented to the Honors Council. Departmental Honors candidates are assigned an advisor who supervises the preparation of the thesis to be submitted to his department and to the Honors Council. The candidate also presents an oral defense of his thesis. If by the excellence of his work he satisfies all the requirements of his department and the Honors Council, the candidate is awarded honors in the field of his specialization upon graduation. During the senior year, independent study is carried forward each semester as a three-credit course in the department of the major. Senior Honors students have the privilege of enrolling in courses normally limited to graduate students. By permission of the head of the department of their major, Senior Honors students may gain admission to the Graduate School of the University and enroll in courses for graduate credit, provided requirements for the baccalaureate are separately fulfilled.

Further Opportunities for Independent Study

Students majoring in the College of Arts and Sciences who have a cumulative quality point average of 3.0 or better may, upon the recommendation of their major department, the Honors Council, and the approval of the Dean, pursue special courses of study during the senior year. The program must be the equivalent of thirty semester hours of credit, and students electing such programs will be granted release from other formal requirements of the senior year.

STUDENT ORGANIZATIONS

Participation in extra-curricular activities offers opportunities to further the broader objectives of a college experience. The knowledge, skills and judgment developed in the classroom can be tested and refined through use in the organizational setting. Thus, more than fifty professional clubs exist on campus as a means of stimulating vocational interest through close contact with members of the teaching staff and representatives of the professions. Student government offers a forum for debate on matters of importance to the entire University community. For those interested in communications, there are several campus publications as well as an FM radio station. Experience in music and drama is available in a number of forms.

Such activities can be a profitable means of fostering maturity and general enrichment in those students who wish to take optimum advantage of all that the University can offer. In encouraging participation in these activities, the University asks only that students plan their time well, in order that they may profit as much as possible from a total University program devoted, first and foremost, to academic studies.

All extra-curricular activities are supervised by the Committee on Recognized Student Organizations composed of alumni, faculty, and students. Recognition for outstanding achievement in this area is given at an annual Student Leaders Night held in the spring. An office devoted to administering and assisting in the conduct of student activities is located in the Student Union. Detailed information about student organizations may be obtained by contacting the Assistant Director—Student Activities.

Student Government

The Student Senate, operating under a student approved Constitution, has vested in it all legislative functions of student government and has the primary goal of promoting the welfare of the entire student body. The Senate levies student taxes and appropriates money for many student activities and services. At the same time, the Senate acts as the official representative of the students both on and off campus. In coordination with the Dean of Men and the Dean of Women, the Senate has the responsibility of establishing effective rules guiding the activities of students at the University.

STUDENT ORGANIZATIONS

Student Honor and Service Societies

Adelphia. The men's senior honor society, recognizing students who have been leaders in the extra-curricular activities of the campus.

Mortar Board. The Isogon Chapter of Mortar Board was installed at the University of Massachusetts in 1955. The purpose of the Society is to promote college loyalty, to advance the spirit of service and fellowship among University women, to maintain a high standard of scholarship, to recognize and encourage leadership, and to stimulate and develop a fine type of college woman. Membership is composed of a total of not less than five or more than 25 girls from the senior class selected on the basis of service, scholarship, and leadership.

Maroon Key. The men's sophomore honorary society, composed of 25 students recognized for leadership abilities and University services.

Scrolls. Women's sophomore honorary-service society, composed of 20 students elected at the end of the freshman year.

Alpha Phi Omega. A fraternity which renders various kinds of service to the University. The group is composed of former members of the Boy Scouts of America.

Revelers. A group of upperclassmen chosen to promote and encourage freshman interest and participation in campus activities.

Fraternities and Sororities

Social fraternities on the campus include Alpha Epsilon Pi, Alpha Gamma Rho, Alpha Sigma Phi, Kappa Sigma, Lambda Chi Alpha, Phi Mu Delta, Phi Sigma Delta, Phi Sigma Kappa, Q.T.V., Sigma Alpha Epsilon, Sigma Phi Epsilon, Tau Epsilon Phi, Tau Kappa Epsilon, Theta Chi. An Inter-Fraternity Council, consisting of representatives of these fraternities, has charge of rushing and all general matters dealing with fraternity life. A cooperative organization—The Fraternity Managers' Association—pools the financial resources of all fourteen fraternities for purposes of effecting orderly, economical purchasing and accounting procedures. A professional Fraternity Manager, with offices in South College, administers the Association's program.

Sororities include Chi Omega, Gamma Chi Alpha, Kappa Alpha Theta, Kappa Kappa Gamma, Phi Delta Nu, Pi Beta Phi, Sigma Delta Tau, and Sigma Kappa. The Panhellenic Council, made up of representatives from the sororities, supervises rushing and other sorority matters.

STUDENT ORGANIZATIONS

Campus Publications

The Collegian. Tri-weekly newspaper published by undergraduates.

The Literary Magazine. Magazine for the publication of literary and artistic efforts of undergraduates.

Ya Hoo. Campus humor magazine, published three times a year.

Engineering Journal. Quarterly open to science and engineering students for the publication of technical articles and essays of general interest.

Dramatics

The Roister Doisters. The University's drama club, the Roister Doisters, is open to all four-year students interested in any phase of the art of the theater. Regular performances of major plays gives members excellent opportunities for gaining experience in acting, production techniques, and other aspects of dramatic presentation.

University Music Organizations

Campus music organizations provide experience in musical and allied activities for performers and technicians with various kinds of interest and ability. Membership is open to all students, faculty, alumni, and others in the area community.

Bands. The Concert, Marching, and Dance Bands are formally organized groups in which student instrumentalists may participate. Informal ensembles for special occasions are also available.

Chorale. The University's choral group rehearses notable works for presentation on campus and on tour. Smaller choral ensembles are trained for special musical events.

Operetta Guild. The Guild produces standard works from the repertoire of American musical theater. Membership is open to persons interested in an art form which provides experience in many elements of musical performance as well as in staging, acting, and other theater activities. The Guild sponsors an Opera Workshop each year as well as miniature musical theater groups.

Concert Association. The Association offers students an opportunity to stage professional concerts and recitals and to administer a large-scale annual enterprise involving major financial and promotional concern. The Association each year presents distinguished attractions including national symphony orchestras, outstanding operatic performers, instrumental virtuosi, and other offerings.

STUDENT ORGANIZATIONS

Professional Clubs

Numerous professional clubs, established in connection with the various major courses of study, stimulate students' professional interest in their chosen fields and afford opportunity for discussion of technical subjects of mutual interest.

Intercollegiate and Intramural Athletics

The University believes there are educational advantages in a well-organized intercollegiate and intramural sports program. In intercollegiate athletics, the University is represented by teams in all the leading sports, including football, soccer, cross-country, basketball, swimming, wrestling, indoor and outdoor track, hockey, rifle and pistol, baseball, tennis, golf, lacrosse, gymnastics, skiing.

The University also supports a broad program of intramural activities, in which all students are encouraged to participate. The range of sports available each year includes the team sports of touch football, basketball, softball, volleyball. Individual activities include tennis, bowling, badminton and golf.

The University Intercollegiate Athletic Program is supervised by the University Athletic Council and is composed of the following members: five faculty members appointed by the President, three alumni representatives appointed by the Directors of the Alumni Association, the Executive Director of the Alumni Association, and ex officio, the Director of Athletics.

The University of Massachusetts is a member of the Yankee Conference, the National Collegiate Athletic Association, the Eastern College Athletic Conference, the Association of New England Colleges for Conference on Athletics, and the Intercollegiate Athletic Association.

ACADEMIC HONOR SOCIETIES

Phi Kappa Phi. The Honor Society of Phi Kappa Phi is a national organization, and has been represented on this campus since 1904. Its primary objective is the recognition and encouragement of superior scholarship in all fields of study. Good character is an essential supporting attribute. The Massachusetts chapter elects undergraduates in either their junior or senior years. Members of the Faculty and graduate students are also eligible for election.

Sigma Xi. The Society of the Sigma Xi is the national honor society whose objective is the encouragement of original investigation in science, pure and applied. Since 1938, a chapter of the Society has been active on the campus of the University. The Chapter may elect to associate membership undergraduate students who have shown marked excellence in the study of recognized fields of the sciences and engineering. Election to full membership is accorded those who have clearly demonstrated ability to pursue independent scientific research. The Chapter sponsors a program of public lectures and a number of awards designed to foster the objectives of the Society.

Sigma Gamma Epsilon. The Beta Theta chapter of the Sigma Gamma Epsilon Fraternity was installed at the University of Massachusetts in 1951. The purpose of the fraternity is to stimulate scholastic, scientific, and social advancement of students of the earth sciences in universities and scientific schools with recognized standings in the United States and Canada. Membership is open to men majoring in geology, mining, metallurgy, ceramics, petroleum engineering, or other branches of earth sciences, who meet the requirements of the fraternity.

Omicron Nu. The Alpha Pi chapter of the Society of Omicron Nu was installed on the campus in 1952. The purpose of the society is to recognize superior scholarship and to promote leadership and research in home economics. Membership is open to juniors and seniors majoring in home economics who meet the requirements of the society.

Phi Tau Sigma. Phi Tau Sigma Honorary Society is the international honor society for food science. It was founded at the University of Massachusetts in 1953, and its executive headquarters are permanently located here. Its purpose is to encourage and recognize achievement in food science. Senior students from all

departments related to food science are eligible for election to membership if they meet scholastic and character requirements of the University Chapter.

Tau Beta Pi. The Massachusetts Zeta Chapter of Tau Beta Pi was installed on campus in the fall of 1955. The society exists for the purpose of honoring engineering students of high scholarship, character, and interest in campus activities. Senior and junior students in the School of Engineering are eligible for election to membership if they meet the requirements.

Beta Gamma Sigma. The Gamma Chapter of the University of Massachusetts was installed in 1959. The purposes of the Society are to encourage and reward scholarship and accomplishment among students in commerce and business administration; to promote the advancement of education in the art and science of business; and to foster integrity in the conduct of business operations.

Alpha Lambda Delta. The Scholastic Honor Society for Freshman Women was installed at the University of Massachusetts as a chapter of Alpha Lambda Delta, national honor society, in 1960. The purpose is to promote intelligent living and to encourage superior scholastic attainment among freshman women. Members are students who achieve averages of 3.5 or above in the first semester or in cumulative average at the end of the first year of college.

Phi Eta Sigma. The Society of Phi Eta Sigma was installed on the campus in 1955. The purpose of the society is to recognize outstanding scholastic achievement by freshmen men and to encourage a higher standard of learning among all freshmen. Honorary membership is granted those faculty members who are most effective in encouraging students in the attainment of these goals.

UNDERGRADUATE CURRICULA

Undergraduate instruction is provided in the College of Arts and Sciences, the College of Agriculture, the Schools of Business Administration, Education, Engineering, Home Economics, Nursing, and Physical Education.

This section of the catalogue deals with the opportunities for study and the curricula available in each of these departments of the University.

COLLEGE OF ARTS AND SCIENCES

I. MOYER HUNSBERGER, *Dean*

The College of Arts and Sciences offers instruction in the fine arts, the humanities, the social sciences, the natural sciences, and mathematics both for students enrolled in the College and for those in other undergraduate divisions of the University. The program provides for the breadth of intellectual development essential to a liberal education and for concentration which is the necessary foundation for competence in a selected discipline.

The Bachelor of Arts degree may be earned by students majoring in any division of the College. The Bachelor of Science degree may be earned by students in the natural sciences or mathematics.

MAJORS

Art

The department of art is interested in providing two kinds of training: first, to give each student a good general historical and aesthetic knowledge of the arts; second, to give each student an opportunity to develop his creative ability in the several media of the arts. Majors will have specialized sufficiently to allow them to enroll in a professional art school at an advanced level, or to take jobs upon graduation in business or cultural organizations where some facility in the arts is required.

By arrangement with the School of Education, courses can be so arranged that an art major will secure the necessary credits in education to allow him to teach art in the public schools.

Astronomy

A Department of Astronomy conducted jointly with Amherst, Mount Holyoke, and Smith College provides instruction in this field. All advanced courses are given on a joint basis for students from the four participating institutions.

The Department of Astronomy offers courses which furnish (1) specialization for those planning a career in astronomy and (2) a background for students in other departments who are interested in astronomy for its cultural or scientific value.

Bacteriology

The courses in bacteriology have been planned to furnish (1) a basic and applied training for students majoring in other departments who must have some knowledge of bacteria and (2) specialization for those contemplating a professional career in bacteriology.

Botany

Programs in botany prepare students for teaching and research in biological sciences in high schools, universities, industry, and experiment stations.

Chemistry

The prime purpose of the Department of Chemistry is to offer sound preparation for graduate study in chemistry. Accordingly, emphasis is placed upon intellectual accomplishment and broad understanding rather than on terminal training for specific chemical tasks. The program designed for this purpose also affords sound preparation for direct entry into chemical industry, chemical institutes, or governmental laboratories. A slightly modified program permits preparation for secondary school teaching.

Economics

In economics the aims are twofold: (1) to give the student an understanding of economic theory and of the application of economic principles to the organization of society; (2) to provide students with the elementary training necessary for further study and solution of economic and business problems.

English

The major in English affords the student opportunities to improve his knowledge of the English language and his ability to use it clearly, logically, and artistically; to increase his knowledge of Western literature written in English or translated with distinction into English; to read and discuss a literary work with perception and understanding, and to form an independent estimate of it by valid critical standards. Apart from its value as liberal education, such a program is especially helpful to students whose interests lie in writing, editing, criticism, and teaching.

Geology

For students considering geology as a career, the opportunities are many. Those interested primarily in basic science may look to positions in teaching, in museum work, on state and federal surveys, and in various research organizations. Those concerned mainly with applied science may direct their efforts toward work in mining geology, petroleum geology, engineering geology, and ground-water geology, and industrial mineralogy.

German

The courses in German are intended to give a practical knowledge of the language for the purpose of wider reading, research, and oral communication.

Government

The courses offered by the department of government are designed to aid the student in gaining a knowledge of the nature, functions, and problems of government, and of the place of government in the modern world. Political theory, constitutional law, international relations, comparative government, politics and public administration are the principal areas covered.

History

Courses in history are designed to provide an understanding of man through a study of patterns of development in the past. The study should also give the student an introduction to major problems in world affairs.

A major in history has value to the general student as a humanistic discipline. It has application as preparation for careers in fields of teaching, law, government, journalism, ministry, library and business.

Journalism

The journalism program is concerned with (1) the study of writing and of communication problems relevant to the media of mass communication, and (2) the best utilization of the University's liberal education resources by students who plan careers in newspaper work, communications research, public relations, magazine and radio journalism, or some other field of communications.

For such students the journalism courses are intended to provide both increased communication skill and relevant background. The courses may have special value also for students who plan to go into government service, law, education, and similar fields in which knowledge of the process and effects of communication is particularly useful.

Mathematics

The department offers courses designed to furnish a cultural

background as well as a foundation for both undergraduate and graduate work in such fields of science as physics and chemistry, in engineering and in other technical subjects.

The courses recommended for majors in the department are designed to prepare students for high school teaching, graduate study in mathematics, actuarial work, statistical work, or work in industry.

Music

The Department of Music offers both a major program and a program of continuing study for non-majors. The areas covered by courses are: 1) Music Appreciation, Literature, and History, 2) Theory and Composition, 3) Music Education, 4) Applied Music, a) Ensembles, instrumental and choral, b) Individual Instruction in voice, piano, organ and orchestral and band instruments.

Possible fields of concentration are music theory, music history, and music education. In conjunction with other departments, and occasionally with nearby colleges, special programs are available in recreation, radio and television, graduate studies, Church Music, Musical Performance, and Music Therapy.

Arrangements for Individual Instruction (area 4b), including those for fees and practice, are made through the Department of Music Office. All credits in area 4b will be recorded, but will not be applicable to graduation credit in excess of 3 hours.

Philosophy

Philosophy seeks a comprehensive understanding of the various areas of man's experience in their interrelatedness. In the context of the historically important theories, the courses concentrate on methods of inquiry into the persisting questions of philosophy, standards of thought, clarification of ethical and aesthetic values, and the basis of criticism.

Physics

Courses are designed to accommodate students who desire specialized training in physics, and also to provide required or elected courses for students majoring in engineering, mathematics, chemistry, or other fields.

Pre-Medical and Pre-Dental Curriculum

Pre-medical and pre-dental students are assigned to faculty advisers for their freshman year. At the end of their second semester, they will be assigned to a member of the Upperclass Committee who will be their adviser for the remainder of the course of study.

Pre-veterinary students may register in the College of Agriculture or College of Arts and Sciences. In the latter case, they will be assigned to advisers in the same manner as the other pre-professional students.

Medical schools do not look with favor on over-specialization in

any field. They stress the importance of a broad general education. Since the University requires that every student who graduates must have selected at least 15 credits of junior-senior courses in some one department, the pre-professional student should include courses beyond the introductory level in all fields, especially in the humanities and social sciences. The student decides on his electives only with the advice and consent of his adviser.

Psychology

The courses in the psychology department are planned (1) to impart an understanding of behavior and the application of this knowledge to problems of human adjustment; and (2) to give preparation for professional work in psychology and related fields.

Careers open to psychology majors include: teaching and research, guidance and counseling, psychometrics, child welfare, clinical psychology, school psychology, social work, opinion polling, personnel and industrial work and engineering psychology. Graduate training is required for certain of these careers.

Public Health

The curriculum in public health is designed to prepare a student for a health career. Career opportunities are open in: (1) administration of health services; (2) in basic sciences related to health; (3) in environmental health services; (4) in food and drug protective services; (5) in health education; and (6) in health information and communications.

Romance Languages

Two majors are offered: French and Spanish. The courses of these curricula are intended to give 1) a thorough training in the language skills, 2) an appreciation of the aesthetic and intellectual qualities of the literatures, and 3) a serious insight into the cultures of the nations concerned.

Russian

Students choosing Russian as their field of major concentration will receive training in reading, writing, speaking and understanding the language, and a knowledge of Russian literature. Russian majors will also acquire the background in Russian history, government and economy necessary for an understanding of the literature and culture of the Russian people.

Russian majors will be prepared to continue their education on the graduate level in the fields of Russian, Slavic Languages and Literatures, or Russian Area Studies.

Sociology and Anthropology

The courses in sociology and anthropology are planned with two aims in view: to give the student an understanding of the factors

which influence men in their activities and interests as members of society, and to help prepare students for a wide variety of occupational outlets.

Students interested in teaching at the elementary or high school level should take a minor in the School of Education and at least 6 credits in American history with as many credits in American government as can be arranged.

Of the many opportunities in the field of social work, some are available to college graduates, while others require graduate training in a school of social work.

Aside from opportunities in the business world, many federal agencies and private research organizations seek people who are trained in the research techniques of sociology.

Social Work

The American Association of Schools of Social Work indicates that the pre-professional subjects most closely related to professional work in this field are economics, political science, psychology, and sociology. The Association recommends that prospective students of social work or social administration take not fewer than 12 semester hours in one of these subjects while taking less in others.

Speech

An undergraduate major in speech may be earned by completing thirty semester hours of course work in the department although nine of these may be earned in English and philosophy. Psychology 26 should be elected as a basic requirement. The student must select an area of concentration in (1) Rhetoric and Public Address, (2) Interpretation and Theatre, (3) Radio and Television, (4) Speech Education, (5) Speech and Hearing Therapy. Students concentrating in Speech and Hearing Therapy may fulfill all the certification requirements of the American Speech and Hearing Association and the Massachusetts State Department of Education. Students interested in preparation as public school therapists should plan to minor in the School of Education. For those interested in work in a rehabilitation or hospital setting, a minor in psychology should be planned.

Zoology

The courses in zoology have two major aims: (1) to offer students an opportunity to develop an understanding and appreciation of the scientific method as a part of a liberal education; and (2) to provide training for prospective graduate students in biology, medicine, dentistry, and related fields, as well as future teachers and laboratory technicians in the biological sciences.

COLLEGE OF AGRICULTURE

ARLESS A. SPIELMAN, *Dean*

The College of Agriculture offers a broad general education with specific training in a specialized area. Upon the completion of the requirements for graduation, the student will have devoted about one-quarter of his time to pure science, one-quarter to social and humanistic studies, and about one-half to applied science and technology.

A broad choice of electives within the required courses of each curriculum gives the student the opportunity to prepare for a career in research, industry, business, education, conservation, services, or farming.

Each department of the school has specific requirements for graduation which are included in the descriptive matter under the name of the department.

During the first semester of the freshman year, students interested in teaching vocational agriculture, extension work, or specializing in research work, should consult with the head of the department in which they plan to major.

The College has the following departments: Agricultural and Food Economics, Agricultural Engineering, Agronomy, Dairy and Animal Science, Entomology and Plant Pathology, Food Technology, Forestry and Wildlife Management, Horticulture, Landscape Architecture, Poultry Science and Veterinary Science. Students may major in any of these departments except Veterinary Science; pre-veterinary students are counseled in either Arts and Sciences or Agriculture.

MAJORS

At the end of the sophomore year each student selects one of the following curricula as his major to complete his collegiate training.

Agricultural Business

This curriculum is designed 1) to prepare students for employment in executive positions with firms related to agriculture or for administrative positions with governmental agencies concerned with agriculture and 2) to give the essential undergraduate preparation for a career in agricultural economics, in research, teaching, or extension work. The course of study, which leads to the degree of

Bachelor of Science, combines training in technical agricultural sciences with courses in business management and economics. The resources of the College of Arts and Sciences and of the School of Business are used in addition to those of the College of Agriculture in order to provide a body of course work which gives the student substantial technical training within the framework of a liberal college education.

Agricultural Engineering

Agricultural engineering is concerned with the application of scientific engineering principles to agricultural production and related agricultural industries. This professional field includes engineering activities related to the design, development and use of mechanical and electrical equipment; farm structures; and soil and water control systems for the production, processing and preservation of agricultural products and the improvement of rural living. Agricultural engineers are employed by a variety of agricultural industries and organizations for research, development, teaching, and promotional activities.

The program is designed to provide sound training for the agricultural engineering profession. The student majoring in this field will take his freshman and sophomore work at the University and then, under a cooperative agreement, complete his Bachelor of Science program at the University of Maine.

Agronomy

The curricula provide basic education and training in soil science, crop science and agrostology. There is sufficient flexibility within the curricula to allow specialization in crops, soils or fine turf.

Animal Science

The animal science curriculum is designed to provide the student with fundamental training in the nutrition, physiology, breeding, selection and management of farm animals.

The curriculum is made flexible by permitting specialization in optional fields which prepare the student for positions in dairy or livestock production and marketing, in agribusiness or in education and extension, through electives chosen from the fields of agronomy, agricultural engineering, economics and veterinary medicine. Options emphasizing basic sciences are also available for those preparing themselves for graduate work in such specialized areas of animal science as nutrition, physiology of reproduction or genetics.

Dairy Technology

Major students in dairy technology receive training in the testing, handling, and processing of milk, ice cream, butter, cheese, and

other milk products. Practical application is made of chemistry, bacteriology, economics, and engineering in the many phases of dairy work.

Dairy technology graduates may secure responsible positions with commercial dairy manufacturing firms, or with equipment and supply firms. Opportunities are offered in the fields of extension, research, and for sanitation and public health work with city, state or federal agencies.

Entomology

Courses in entomology acquaint students with all phases of insects and insect control, as well as beekeeping. Trained entomologists find positions in public service and industry, such as teaching at all levels; research, quarantine and regulatory work in State or Federal Service; various roles in public health and pest control activities; research, sales and public relations work in the agricultural chemicals industry; and commercial beekeeping.

Food Distribution

This course of study is designed to prepare students for careers in management in the food industry and in government agencies concerned with food production, processing and marketing. The curriculum leads to the degree of Bachelor of Science. Substantial emphasis is given to training in the scientific and technical principles that underlie modern food processing and marketing. In addition, the curriculum includes courses in business management and in economics plus specialized courses in food marketing and merchandising.

Food Management

The curriculum in food management is offered by the food technology department. The program is designed to give the student a general well-rounded background of arts and sciences, coupled with training in subjects useful to the hotel and restaurant industries. The nature of the food service industry requires persons with broad, general backgrounds of business training coupled with a scientific knowledge of foods.

Food Technology

The department of food technology offers two curricula: Food Management and Food Technology.

The curriculum in food technology provides scientific and applied training in the principles concerned with the processing, preservation, and packaging of foods and food products. The student's background in chemistry, physics, and bacteriology is applied to

food technology problems and food analysis. Major fields open to graduates include: (1) technical and production work in the food industries; (2) control and analytical work related to food products; (3) government food inspection and grading; (4) technological work and research in government, industry, and education.

Forestry

The technical curriculum in forestry is concentrated in the field of forest production and management, and leads to the degree of Bachelor of Science. It has professional status, being accredited by the Society of American Foresters. Graduates are prepared for employment with Federal and State agencies and in private industry. The curriculum emphasizes the multiple-use concept of forest land management, and stresses the scientific and economic foundations of forestry rather than methods. The first two years are devoted largely to science, English, and other cultural-foundational subjects, the last two years mainly to professional subjects of the major.

Horticultural Science

The major in Horticultural Science permits specialization in any one of the following areas: Floriculture, Olericulture, Pomology. Each of these areas provides basic training in the scientific principles and applied practices relative to the production and marketing of their respective crops—flowers, vegetables, and fruits. Principal areas of employment open to graduates include: (1) teaching in secondary schools; (2) wholesale and retail marketing; (3) service personnel for industrial concerns manufacturing equipment and supplies used in the production and distribution of horticultural crops; (4) commercial production; (5) graduate study leading to professional careers in college teaching, research, and extension with state, federal or private agencies. Each program of specialization also provides ample opportunity for supporting elective courses which will better fit the student for his special objective.

Landscape Architecture

Students following this curriculum are prepared to take up work in landscape architecture, which leads through field experience or post-graduate study to permanent establishment in the profession.

Plant Pathology

Plant pathology is concerned with the nature and control of plant diseases caused by fungi, viruses, bacteria, nematodes, certain higher plants and unfavorable environmental conditions. Plant pathologists fill positions in public service and in industry, such

as teaching at all levels; research in state, federal, university, and industrial laboratories and experiment stations; and extension service through federal, state, and county organizations. They are employed in quarantine and regulatory work, in various roles in plant disease control, and in sales and public relations work in agricultural chemical industries.

Poultry Science

Two general areas of study are available to the student majoring in this department depending on interests and abilities.

(1) Poultry Production and Management—This plan of study will prepare students for farm operations either as owners or managers; as servicemen, specialists and managers in industrial fields; and for federal and state extension work and regulatory programs allied to the poultry industry. The program is supported by electives in business, agricultural economics and communicative skills.

(2) Poultry Science—This program is primarily for students interested in and capable of graduate work leading to careers in poultry science teaching and research and as agricultural scientists with breeding organizations, feed manufacturers and pharmaceutical corporations. Students interested in poultry science supplement the basic curriculum with basic sciences chosen to support further study in poultry genetics, physiology, nutrition and products technology.

Veterinary Science

Though major work in Veterinary Science is not available, the department offers supporting courses to assist students who expect to enter the various fields of agriculture, wildlife management, public health, teaching and laboratory work in the biological sciences.

Wildlife Management

Wildlife management is concerned with the production and control of animal populations on farms, forests, waste lands and water areas. Thus an understanding of both the origin and management of land and water is necessary. These background phases include geology, agronomy, forestry, and agriculture. Fields of specialization include game and furbearer management, control of injurious animals, and related fields.

Studies in wildlife management are closely correlated with the work of the Massachusetts Department of Natural Resources and the U. S. Fish and Wildlife Service.

SCHOOL OF BUSINESS ADMINISTRATION

H. B. KIRSHEN, *Dean*

The School of Business Administration prepares students to take advantage of important economic opportunities and eventually to assume positions of responsibility in business. The School's educational program is directed toward the professional aspects of business, encouraging high standards of ethical conduct, broad social responsibilities and the development of competence in particular courses of study of the student's own interest, aptitude and choice.

The first two years emphasize general education by providing fundamental courses in the humanities, mathematics, science and social science. In addition, basic courses in accounting and economics prepare the student for further work in the School of Business Administration. The first two years are largely prescribed.

The School of Business Administration is a member of the American Association of Collegiate Schools of Business.

Courses and major programs are listed under four departments in the School of Business Administration: Accounting, General Business and Finance, Management, and Marketing. Irrespective of any major selected a certain "core" of courses is required of all students.

MAJORS

Accounting

The accounting program is designed to prepare students for public accounting and for positions as accountants in business, industry and government.

General Business and Finance

The department has three major programs: *Finance*, *Business Administration and Economics*, and *General Business*. The curriculum in finance is directed towards the fields of banking, investment, brokerage, insurance or governmental agencies concerned with finance. The curriculum in Business Administration and Economics comprehends a wider field to balance a knowledge of both economics and business. The curriculum in General Business was designed for students who do not wish to specialize in any particular field.

Management

Industry and business offer qualified students an opportunity to find careers in General Management, Production Management, and in Personnel Management and Industrial Relations. Course programs are offered in each of these fields and provide the student both a specialized and a comprehensive understanding of the managerial process in industrial enterprises.

Marketing and Merchandising

Students in marketing prepare for a variety of positions in whole-sale and retail enterprises and in the sales activities of manufacturers. The program includes specialized study of basic types of market operations such as advertising, sales management and retailing.

SCHOOL OF EDUCATION

A. W. PURVIS, *Dean*

The School of Education through its undergraduate program seeks to utilize the forces of the University to prepare teachers for elementary and secondary schools and through its graduate offering to prepare administrators and specialists in public education. Its program is based upon the assumption that teachers and other school personnel should have a broad liberal education, considerable mastery of at least one field, and professional courses which should lead to a knowledge of the persons to be taught, familiarity with the problems to be met, and practice in the best techniques of teaching and supervision. In all of this the School of Education takes the position that teacher education is a University function and that success will come only if the School is successful in maintaining the closest possible relationships with other schools and departments that contribute to the program.

All students who contemplate teaching as a career should register early, in their freshman year if possible, with the School of Education although their courses in education do not begin until the junior year. In general, students are admitted without question to the various service courses of the junior and senior years, but admission to the teacher-training program of the concentrated semester block is determined by a composite rating based on scholarship as shown by University grades (a three-year average at least as high as the University median is desired), success in the beginning courses in education, recommendations of University teachers in general education fields, and personality ratings by members of the staff.

Elementary School Teaching

Candidates for this program major in elementary education. In certain cases, with the approval of the Dean of the School of Education, the student may be permitted to major in some department of the College of Arts and Sciences where the general education program is deemed the equivalent of that designed for elementary education majors.

Secondary School Teaching

All candidates for secondary school teaching will major in the subject field to be taught and minor in education. A maximum of eighteen hours should be taken in this minor.

Special Field Programs for Prospective Teachers

In Vocational Agriculture. This program is based on a cooperative agreement between the University and the Vocational Division of the State Department of Education which provides supervisors and consultants in conducting the program.

In Home Economics. These students will major in home economics and minor in education.

In Teaching Coaching. These students will major in physical education and minor in education.

In Music. These students will major in music and minor in education.

SCHOOL OF ENGINEERING

G. A. MARSTON, *Dean*

The departments of chemical engineering, civil engineering, mechanical engineering and electrical engineering comprise the School of Engineering. Each department offers a curriculum leading to a Bachelor of Science degree in that particular branch. An optional curriculum in industrial engineering is offered in the mechanical engineering department.

All curricula are accredited by the Engineers Council for Professional Development.

Engineering can be defined as the combination of science and art by which materials and power are made useful to mankind. An engineer requires intensive technical training but at the same time he should acquire the broad education that distinguishes the professional man from the technician. His education does not end with formal schooling but continues throughout his life as he accumulates experience.

The curricula in engineering have been carefully prepared to offer each student the opportunity to acquire the sound training in mathematics and the basic sciences of chemistry and physics upon which is built the work in the engineering sciences. In the senior year courses are offered which enable the student to use his previous training for engineering analysis, design and engineering systems in his particular field of interest. About twenty per cent of his time is devoted to studies in the social science and humanistic area. Some opportunity is provided to elect courses from both the technical and humanistic-social fields.

The curriculum of the freshman year is the same for all. Specialization to a limited extent begins in the sophomore year.

MAJORS

Majors in Engineering will select one of the following curricula.

Chemical Engineering

Chemical Engineering is concerned with the development of manufacturing processes in which chemical or certain physical changes of materials are involved. These are resolved into a coordinated series of unit operations (physical changes) and unit processes (chemical changes). The work of the chemical engineer is primarily concerned with the design, construction, and operation of equipment and plants in which these are applied. Chemistry,

physics, and mathematics are the underlying sciences of chemical engineering, and economics is its guide in practice.

Chemical engineers are employed not only in industries manufacturing chemicals but in many others, such as petroleum refining, coal processing, refractories and clay products, cement, waste treatment, pulp and paper, rayon and textiles, paint and varnish, natural and synthetic rubber, foods, leather, plastics, soap, penicillin and other antibiotics. Much of the work of the atomic energy program is chemical engineering. The types of work done by chemical engineers include: design, construction, research, development, production, financial and patent appraisal, management, and sales.

Civil Engineering

Civil engineering is concerned with structures, transportation, movement of fluids, use and storage of water, sanitation, and surveying and mapping. A civil engineer may be engaged in research, in planning and designing, in construction, or in maintenance and operation.

The curriculum gives a thorough training in the fundamental physical sciences and at the same time prepares a student for work in any branch of civil engineering, allowing him to specialize to some extent in whatever branch is most interesting to him—sanitation, mechanics and structures, hydraulics, foundation engineering, highway engineering.

Electrical Engineering

Electrical engineering deals with the engineering applications of electricity. Because of its unusual amount of diversity, it is usually convenient to separate it into such main divisions as power, communications, electronics and control, and others.

The undergraduate curriculum is designed to prepare the student for work in any of these fields and to serve as a basis for further specialization. Courses in liberal arts and in engineering courses outside of the department give the student an understanding of the broader aspects of engineering and other fields.

Mechanical Engineering

Mechanical engineering is that branch of the profession which, broadly speaking, covers the fields of heat, power, design of machinery, industrial management and manufacturing problems.

Building upon a foundation of mathematics, physics, and chemistry, the department of mechanical engineering undertakes to show the student how fundamental physical laws apply to this field and to give him thorough training in the basic principles so that particular applications can be mastered in professional practice. Therefore, no attempt is made to give highly specialized instruction.

Industrial Engineering Option

Industrial engineering is concerned with the engineering aspects of the organization, operation and management of manufacturing plants. Consequently, the industrial engineering curriculum is built on a foundation of mechanical engineering. To the technical knowledge and scientific attitude developed through the study of engineering is added the study of certain courses in the humanities, in economics, and in management.

Agricultural Engineering

For a description of the major program and the professional opportunities in this field see College of Agriculture.

SCHOOL OF HOME ECONOMICS

MARION A. NIEDERPRUEM, *Dean*

The four-year integrated program in home economics prepares young women for challenging professional careers as dietitians in hospitals, clinics, hotels, in other institutions and as community nutritionists. Various opportunities are open in extension service, in family welfare organizations, in business and industry, where manufacturers and public utilities require the services of qualified home economists. Fashion, textiles, merchandising and retailing, journalism, advertising and television frequently turn to the home economist for their personnel. Home economics education prepares teachers for pre-school, secondary and adult teaching programs.

In addition to preparation for a career in one of these professions, the graduate home economist has developed an appreciation of the knowledge, understandings, attitudes and skills essential to the dual role of modern women in homemaking and community life.

Child Growth and Development

Students interested in child development, nursery school work and social service work may choose this curriculum. The University has arranged for two affiliations for qualified students interested in taking one semester of specialized work elsewhere: with Merrill-Palmer School in Detroit, which specializes in education for home and family life, and with the Eliot Pearson School in Boston which gives professional training for teaching in nursery schools and kindergartens.

Foods and Nutrition and Institutional Administration

This curriculum prepares for such professions as therapeutic and administrative dietitian, or nutritionist, and meets the requirements of internships approved by the American Dietetic Association. This basic curriculum is also advised for those interested in home service, food testing, commercial food demonstrating; commercial, industrial and institutional food service.

Pre-Research in Foods and Nutrition

This curriculum is planned for the students who wish to prepare for graduate work in nutrition or biochemical research. The course should be planned with the advice of the Dean of the School.

Merchandising

This curriculum provides an opportunity for girls interested in preparing for the merchandising field. The junior and senior curriculum includes courses in home economics and in business administration and should be planned with the faculty adviser by the end of the freshman year if possible. Students choosing this program should plan on at least a year of in-service training after college.

Home Economics Education and Extension

Preparation for teaching demands the same basic courses whether a student plans to teach adults or 4-H Club groups in Extension, or young people at the high school or junior high school level. Teachers should be ready to teach some subject other than home economics if demanded; extension workers need special work in rural sociology and adult education. Courses in speech and writing are important. Camp teaching or apprentice training is recommended between junior and senior year.

SCHOOL OF NURSING

MARY A. MAHER, *Dean*

The basic nursing program is designed to prepare the qualified high school graduate for a career in professional nursing, as well as for the responsibilities of family and community life.

The program aims to equip the graduate with those understandings and skills which are needed to function effectively in beginning positions in a variety of nursing situations. These include the ability to provide competent nursing care to patients and families in the hospital, home and community; to participate with allied professional and citizen groups for the improvement of total health services to individuals and communities; to participate in organizing, planning and directing the work of nursing auxiliary workers. A foundation is laid for advanced study, through which the nurse may prepare for positions in teaching, supervision, administration, consultation and research.

During the first two years at the University, the student builds an educational foundation upon which to base the more specialized portion of the program. Courses in the humanities and in the sciences—biological, physical and behavioral—are taken with other students on the campus.

The clinical aspects of the program are developed in the next two years, when instruction and correlated clinical practice are given in selected cooperating agencies by the nursing faculty of the University and the allied professional staffs of the cooperating agencies. These agencies include: the Springfield Hospital; the Wesson Maternity Hospital, Springfield; the Visiting Nurse Association of Springfield, the Springfield Health Department; and other community health, educational and welfare resources.

The Bachelor of Science degree, awarded upon successful completion of this program, qualifies the graduate for State Board Examinations in Nursing. If achievement in these examinations is satisfactory, the candidate receives legal status as a registered nurse within the state.

The program is fully accredited by the Accrediting Service of the National League for Nursing.

SCHOOL OF PHYSICAL EDUCATION

W. P. McGUIRK, *Dean*

The School of Physical Education includes the Departments of Physical Education for Men, Physical Education for Women, Recreational Leadership, and Athletics. It offers a major in Physical Education, and in Recreational Leadership.

PHYSICAL EDUCATION FOR MEN

General Program

Each male freshman and sophomore student, unless exempted under certain conditions, must successfully complete four semesters of physical education and demonstrate his ability to swim as a requirement for his degree. The physical education requirement does not apply to those students excused by the University physician, veterans of military service, and certain transfer students.

Students may receive credit for physical education, during the sport in season, by becoming squad members of any freshman or varsity team. Freshmen who elect an athletic team sport for physical education credit must rejoin their class sections at the termination of the seasonal sport. Students may not participate in a given sport for credit for more than two semesters.

To fulfill requirements, all students must participate in three team sports, four individual activities and aquatics.

Major Program

The major program leading to the degree of Bachelor of Science in physical education is designed to train the student for a career as a teacher of physical education. The curriculum combines both general and professional education and provides for full teacher certification for the student who has met the prescribed requirements of preparation. The program also provides for adequate training in a minor area of teaching, elected by the student, including the coaching of inter-school athletics.

PHYSICAL EDUCATION FOR WOMEN

General Program

Physical Education is required of all women students during their freshman and sophomore years. The courses are planned to provide recreative activity, to improve individual skills, to develop body grace and efficiency and to increase health and vigor.

The first and second year women students are required to take three class hours a week for a total of eight credits, one for each quarter of satisfactory work.

Major Program

The major course in physical education is planned to prepare women students for professional careers. Especial attention is given to preparing teachers for elementary and secondary schools in both physical and health education. Other areas for which the graduate will qualify are teaching sports and dance in social agencies, industrial plants, civic centers and camps. A foundation will be laid for specialization in graduate study.

The curriculum gives a broad general background as well as the professional preparation. There is opportunity for individual selection in order to provide a minor.

RECREATION LEADERSHIP

Major Program

The department seeks to prepare men and women for positions involving administrative, supervisory and program leadership responsibilities in municipal recreation agencies, voluntary and youth-serving agencies, hospitals, and industrial and institutional organizations.

The program is designed to provide opportunities for a general education, a knowledge and understanding of people and society, activity skills and resource knowledge, professional competency, and practical experience in various leadership situations.

In addition to completing the curriculum as described below, the student is required to:

- 1) attend a professional conference approved by the department;
- 2) participate in programming activities at the Student Union, with a scout troop, or in a similar setting approved by the department;
- 3) devote one summer (minimum of six weeks) to a recreation position, preferably with pay, in a camp, playground, or similar setting approved by the department.

DEPARTMENT OF ATHLETICS

A comprehensive program of intercollegiate and intramural athletics is conducted by the department's coaching staff.

DIVISION OF MILITARY AND AIR SCIENCE

The Division of Military and Air Science includes the Department of Military Science and the Department of Air Science. No major is offered in either department. All male students, except veterans, who intend to complete the necessary requirements leading to a degree in any four-year course at the University are required to complete the two-year basic course (Army or Air). Male students who are certified by the Director of the University Health Service as being not physically qualified are excused from attendance at military drill but are not excused from attendance at Military and Air Science classes. Conscientious objectors may apply to the President of the University for authorization to be excused from this requirement.

DEPARTMENT OF MILITARY SCIENCE (Armor)

ALBERT W. AKYROYD, Lt. Col., Infantry, Head

The Army Reserve Officers Training Corps is the means by which young men who have taken the leadership step of coming to the state university may assure themselves that their military service is performed in commissioned status.

The first two years are basic training in leadership and citizenship. The student is informed on the position of the military in the current scene and as it relates to his future.

The second two years of ROTC are not only elective, but selective. The best qualified volunteers are permitted to contract to continue on to a reserve commission. The Army provides these men a subsistence allowance and additional emoluments. There is a six-week training period between the junior and senior year.

Participation in ROTC has notable effect in character development. It also discloses to the army existing officer material and its potential leaders.

DEPARTMENT OF AIR SCIENCE

JOHN C. MARCHANT, Colonel, USAF, Head

The mission of the department program is to develop in selected college students, through a permanent program of instruction, those qualities of leadership and other attributes essential to their progressive advancement to positions of increasing responsibility as commissioned officers in the United States Air Force. It is not expected that all so commissioned will select the USAF as a career; nevertheless, the program does offer an excellent means to prepare for such a career.

The first two years of instruction, the basic course, give a foundation for leadership and air and space age citizenship. The program of the last two years, advanced Air Force ROTC and four weeks of summer training at the end of the junior year, is designed

primarily to provide officer training for those selected and qualified for flight training and for technical or administrative assignments.

RELIGION

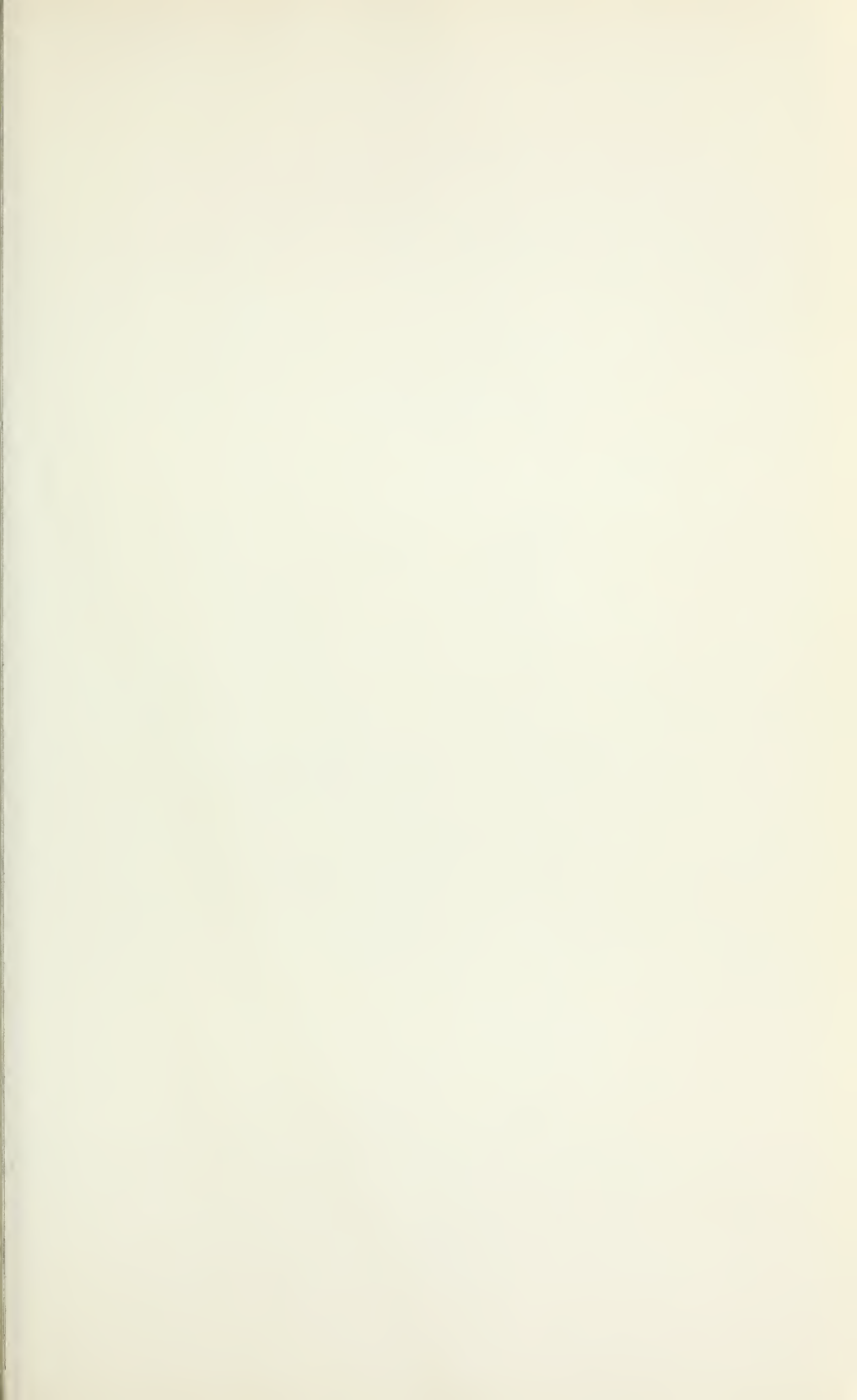
CHAPLAINS POWER, RUCHAMES, AND SEELY, *Advisers*

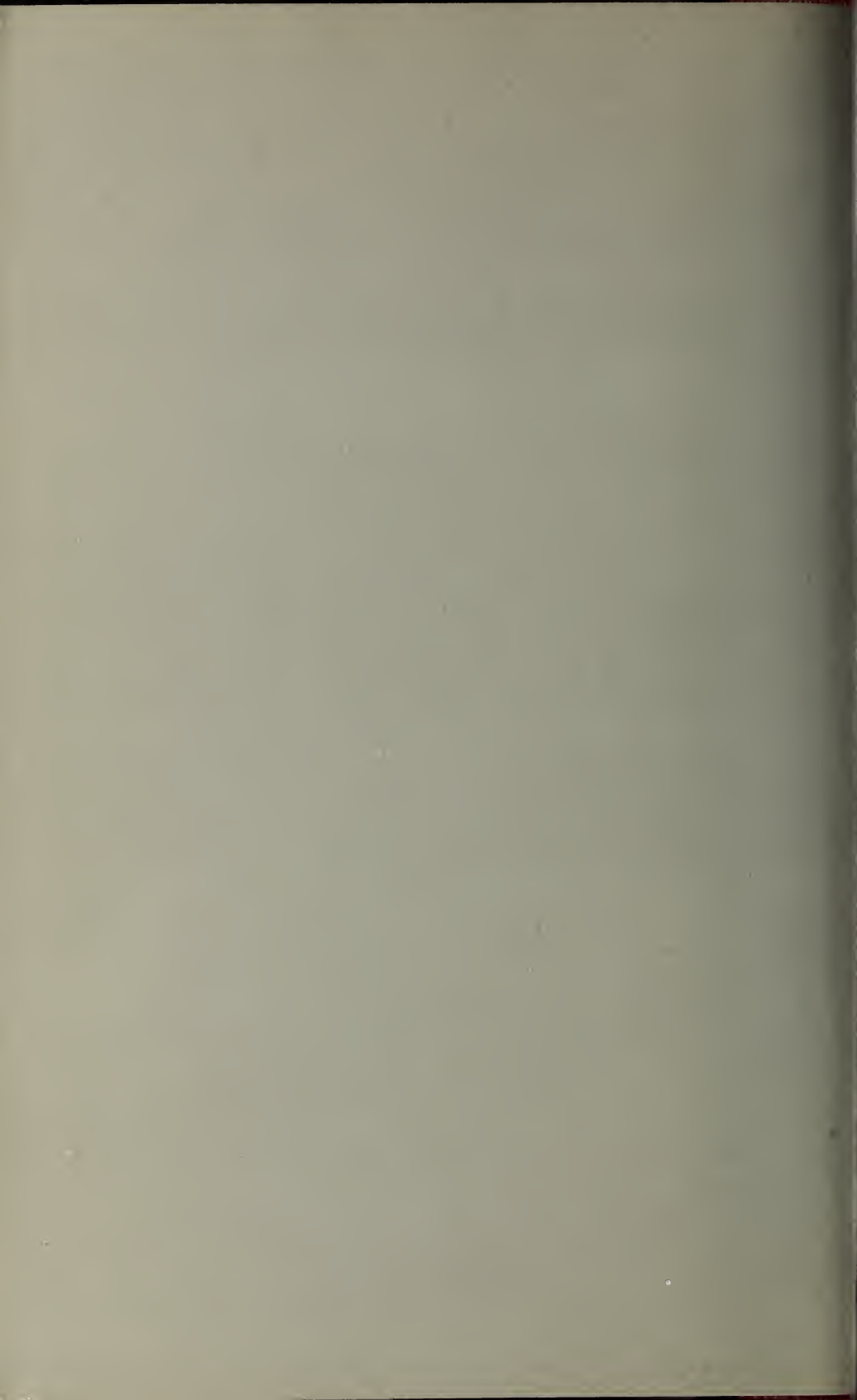
Although there is no department of religion at the University of Massachusetts, students interested in pursuing religion as an academic discipline have certain opportunities, both in curricular and co-curricular ways.

In the formal curriculum, courses are offered by several departments in the College of Arts and Sciences. Credit courses in history, such as those covering the ages of medieval civilization and of the Reformation, for example, afford systematic study into the religious institutions and movements of those periods. Similarly, those offered by the philosophy department in the Philosophy of Religion and in Oriental Philosophies provide a critical and constructive study of basic issues, in both the contemporary western world and Asia. Also, certain courses in other departments deal with matters of religion.

In addition to curricular work, students may learn from co-curricular programs of an academic nature offered by the Chaplains and the campus religious organizations. Each year classes (non-credit) are taught by the Chaplains and invited lecturers on topics such as Basic Beliefs and Practices of Judaism, Catholic Faith and Practices, Essentials of Protestant Christianity. Classes in Hebrew and Yiddish, study groups on various problems in campus living, and workshops on personal relations are also open to students.

The B'nai B'rith Hillel Foundation, the Christian Association, and the Newman Club frequently bring to the campus lecturers and scholars of national and international repute to speak at open meetings. Distinguished scientists, journalists, and government officials, as well as theologians and religious leaders, have come as guests of the religious organizations, and some provide leadership for large-scale events such as retreats, the Religious Embassy, and holy day observances. Lectures on religion are occasionally offered in a series of three or more under the leadership of well-known scholars and teachers. The educational and cultural programs of the campus religious organizations are open to all who are interested.





THE UNIVERSITY
OF MASSACHUSETTS
Bulletin

STOCKBRIDGE SCHOOL OF AGRICULTURE
1962-1964

Bulletin

UNIVERSITY OF MASSACHUSETTS

Stockbridge School of Agriculture

1962-1964



The University of Massachusetts is both a State University and a Land Grant College and as such has been established by Acts of Congress and of the Legislature of Massachusetts.

The two year course at the University of Massachusetts is known as the Stockbridge School of Agriculture, named after an early president of the University. Included herein are descriptions of the various courses offered, information concerning expenses, enrollment and regulations. In the back of the catalogue will be found forms for application and certification of citizenship.

The University reserves, for itself and its departments, the right to withdraw or change the announcements made in its catalogue.

UNIVERSITY BULLETIN
Amherst, Massachusetts

VOLUME LIII

NOVEMBER, 1961

NUMBER 4

Published four times a year by the University of Massachusetts, February, March, August and November.

CALENDAR

1961

First Semester

September 11	—Monday	Registration of Freshmen.
September 12	—Tuesday	Registration of Seniors.
September 13	—Wednesday, 8:00 a.m.	Classes begin.
November 4	—Saturday	Mid-semester marks close.
November 11	—Saturday	Veterans' Day—no classes.
November 21	—Tuesday	Thanksgiving recess begins after last class.
November 27	—Monday, 8:00 a.m.	Classes resume.
December 19	—Tuesday	Christmas recess begins after last class.

1962

January 3	—Wednesday, 8:00 a.m.	Classes resume.
January 17	—Wednesday	Last day of classes before final examinations.
January 18	—Thursday, 8:00 a.m.	Final examinations begin.
January 23	—Tuesday, 5:00 p.m.	Final examinations end.

1962

Second Semester

January 31	—Wednesday	Registration of Freshmen.
February 1	—Thursday	Registration of Seniors.
February 2	—Friday, 8:00 a.m.	Classes begin.
March 24	—Saturday	Mid-semester marks close—Spring recess begins after last class.
March 24	—Saturday	Second semester ends for freshman students except Animal Science, Food Distribution, Food Management, Forestry and Poultry Science majors.
March 26	—Monday	Placement begins for freshmen.
April 2	—Monday, 8:00 a.m.	Classes resume.
May 23	—Wednesday, 5:00 p.m.	Last day of classes before final examinations.
May 24	—Thursday, 8:00 a.m.	Final examinations begin.
May 29	—Tuesday, 5:00 p.m.	Final examinations end.
June 1,2,3	—Friday, Saturday, Sunday	Commencement.

1962

First Semester

September 11	—Tuesday	Registration of Freshmen
September 12	—Wednesday	Registration of Seniors.
September 13	—Thursday, 8:00 a.m.	Classes begin.
November 3	—Saturday	Mid-semester marks close.

November 12	—Monday	Veterans' Day—no classes.
November 20	—Tuesday	Thanksgiving recess begins after last class.
November 26	—Monday, 8:00 a.m.	Classes resume.
December 19	—Wednesday	Christmas recess begins after last class.

1963

January 3	—Thursday, 8:00 a.m.	Classes resume.
January 16	—Wednesday	Last day of classes before final examinations.
January 17	—Thursday, 8:00 a.m.	Final examinations begin.
January 22	—Tuesday, 5:00 p.m.	Final examinations end.

1963

Second Semester

January 30	—Wednesday	Registration of Freshmen.
January 31	—Thursday	Registration of Seniors.
February 1	—Friday, 8:00 a.m.	Classes begin.
March 23	—Saturday	Mid-semester marks close — Spring recess begins after last class.
March 23	—Saturday	Second semester ends for freshman students except Animal Science, Food Distribution, Food Management, Forestry and Poultry Science majors.
March 25	—Monday	Placement begins for freshmen.
April 1	—Monday, 8:00 a.m.	Classes resume.
May 22	—Wednesday	Last day of classes before final examinations.
May 23	—Thursday, 8:00 a.m.	Final examinations begin.
May 28	—Tuesday, 5:00 p.m.	Final examinations end.
May 31, June 1, 2	—Friday, Saturday, Sunday	Commencement

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<i>Director of Placement</i>	
ARTHUR E. NIEDECK, M.S.	Bartlett Hall
<i>Professor of Speech and Head of Department</i>	
RAYMOND H. OTTO, M.L.A.	Wilder Hall
<i>Professor of Landscape Architecture and Head of Department</i>	
JOHN S. PERRY, Ph.D.	Stockbridge Hall
<i>Associate Professor of Agricultural Engineering</i>	
EDWARD S. PIRA, M.S.	Stockbridge Hall
<i>Assistant Professor of Agricultural Engineering</i>	
FRANK E. POTTER, Ph.D.	Flint Laboratory
<i>Associate Professor of Dairy and Animal Science</i>	
PAUL N. PROCOPIO, M.S.	Wilder Hall
<i>Associate Professor of Landscape Architecture</i>	
EUGENE C. PUTALA, M.S.	Clark Hall
<i>Assistant Professor of Botany</i>	
LAWRENCE D. RHOADES, B.S.	Draper Hall
<i>Associate Professor of Agricultural Economics</i>	
ARNOLD D. RHODES, M.F.	Conservation Building
<i>Professor of Forestry and Head of Department</i>	
RICHARD A. ROHDE, Ph.D.	Fernald Hall
<i>Assistant Professor of Entomology and Plant Pathology</i>	
DONALD E. ROSS, B.S.	French Hall
<i>Assistant Professor of Floriculture</i>	
MARTIN SEVOIAN, D.V.M.	Paige Laboratory
<i>Professor of Veterinary Science</i>	
FRANK R. SHAW, Ph. D.	Fernald Hall
<i>Associate Professor of Entomology</i>	
ROBERT T. SMITH, M.S.	Stockbridge Hall
<i>Instructor in Poultry Science</i>	
RUSSELL E. SMITH, D.V.M.	Paige Laboratory
<i>Professor of Veterinary Science</i>	
J. ROBERT SMYTH, JR., Ph.D.	Stockbridge Hall
<i>Professor of Poultry Science</i>	
GLENN H. SNOEYENBOS, D.V.M.	Paige Laboratory
<i>Head, Department of Veterinary Science</i>	
GRANT B. SNYDER, M.S.	Bowditch Hall
<i>Professor and Acting Head, Department of Horticulture</i>	
FRANKLIN W. SOUTHWICK, Ph.D.	French Hall
<i>Professor of Horticulture</i>	

RICHARD A. SOUTHWICK, M.S.	Stockbridge Hall
<i>Assistant Professor of Agronomy</i>	
HERBERT G. SPINDLER, M.B.A.	Draper Hall
<i>Assistant Professor of Agricultural Economics</i>	
RICHARD L. STROMGREN, M.A.	Bartlett Hall
<i>Instructor in Speech</i>	
HARVEY L. SWEETMAN, Ph.D.	Fernald Hall
<i>Professor of Entomology</i>	
JOSEPH TROLL, M.S.	Stockbridge Hall
<i>Assistant Professor of Agronomy</i>	
ALDEN P. TUTTLE, M.S.	Bowditch Hall
<i>Assistant Professor of Vegetable Crops</i>	
DONALD VAN PELT WADDINGTON, M.S.	Stockbridge Hall
<i>Instructor in Agronomy</i>	
WALTER D. WEEKS, Ph.D.	French Hall
<i>Associate Professor of Pomology</i>	
ELLSWORTH H. WHEELER, Ph.D.	Fernald Hall
<i>Professor of Entomology</i>	
LESTER F. WHITNEY, M.S.	Engineering Annex
<i>Assistant Professor of Agricultural Engineering</i>	
KAROL S. WISNIESKI, M.P.H.	Public Health Building
<i>Instructor in Food Microbiology (Public Health)</i>	
ALBERT L. WRISLEY, JR., B.S.	Stockbridge Hall
<i>Assistant Professor of Food Management</i>	
DICK S. VANFLEET, Ph.D.	Clark Hall
<i>Professor of Botany and Head of Department</i>	
JOHN M. ZAK, M.S.	Stockbridge Hall
<i>Assistant Professor of Agronomy</i>	

THE STOCKBRIDGE SCHOOL OF AGRICULTURE

The Stockbridge School of Agriculture is part of the College of Agriculture at the University of Massachusetts. Starting with the class of 1961 graduates received the Associate Degree. The School was founded in 1918 and has graduated over 4,000 students. The successful careers of our graduates are the best proof available as to the value of this kind of concentrated and technical education.

The Stockbridge School program is set up to meet requirements of a cooperative course as defined in Veterans Administration regulation 12205.

The entering student is required to select one of the following thirteen programs of study:

	Page
Animal Science	21
Arboriculture	25
Dairy Technology	28
Floriculture	31
Food Distribution	35
Food Management	39
Forestry	
Vocational	42
Wood Products	42
Fruit Growing	47
Landscape Operations	50
Poultry Science	53
Turf Management	56
Vegetable Crops	58

GENERAL INFORMATION

Entrance Requirements

High School graduates are eligible to apply and there are no formal entrance tests. Preference is given to students with good preparation in English, Mathematics, and Science, and a particular effort is made to select applicants who have demonstrated a strong motivation in their major field of interest.

How to Apply

Fill out application blank, Form 1, page 69, printing or typing all information required. Be sure to check the course you wish to elect. Mail this form, with citizenship certificate, Form II, on page 71, to the Director of the Stockbridge School. If your application is accepted you will be notified and the certificate of citizenship will be kept on hand until you register.

Registration

For registration dates see calendar in front of catalogue.

Instruction

Courses are taught by the University staff. In addition to teaching by lecture and discussion there is a strong emphasis on practical laboratory work. The combined advantages of university instruction and a university plant with all its varied resources are thus made available to Stockbridge students.

Freshmen majoring in Arboriculture, Dairy Technology, Floriculture, Fruit

Growing, Landscape Operations, Turf Management, and Vegetable Crops, are assigned to summer placement jobs on or about April 1, which gives them approximately five months of field experience. Freshmen majoring in Animal Science, Food Distribution, Food Management, Forestry, and Poultry Science do not leave for summer placement until the last week of May following their final examinations. These students, therefore, spend about three months in the field.

Transferring to the University

It is possible, but not easy, to transfer to the University following graduation from Stockbridge. Each case is considered individually by the University Registrar.

A. Application for Transfer

1. A student may be recommended for transfer from the Stockbridge School to the undergraduate course if his cumulative Stockbridge record is 3 or better.
2. The Stockbridge student makes written application to the Head of his Department for transfer to the undergraduate course, stating the major he wishes to follow, the reasons for desiring to make the transfer, and whether he wants the B.S. or B.V.A. degree.
3. The Head of the Department forwards this request to the Registrar with his recommendation.
4. If the recommendation is favorable the Registrar furnishes the student with an application for admission. This is completed by the High School Principal and returned to the Registrar.
5. The applicant is then notified of any entrance deficiencies he may have and advised in regard to examinations he must take. If he is a candidate for the B.S. degree, he takes those in Algebra, English, and the College Qualification Test administered by the University Guidance Office. If he is a candidate for the B.V.A. degree, he does not have to take the Algebra. These tests are given in January, June, and September. The standard of passing will be the same as for veterans taking these tests.
6. Action will be taken on the application after these examination results and the Stockbridge record are available.
7. The Registrars will notify the Head of the Department and the student of the action taken. If the action is favorable, the Registrar will furnish the Department with a photostatic copy of the Stockbridge record.

B. Evaluation of Stockbridge Record

1. Not more than 30 semester hours of blanket transfer credit are allowable for the student who has completed the Stockbridge course with a cumulative average of 3.00 or higher, 10 for the completion of two semesters, and 5 for the completion of one.
2. The Head of the Department to which the student is transferring will determine how much additional credit will be needed to qualify for the Bachelor's degree.
3. A student who has completed three semesters of work in the Stockbridge

School should be encouraged to complete his course before transferring to the undergraduate course.

SCHOLARSHIP REGULATIONS

Absence from Classes

1. Attendance at all lectures, laboratories, and class trips is expected of all students.
2. Each instructor establishes his own attendance rules and the Director will support whatever rules are established.
3. All students are expected to report promptly to the University Infirmary when ill. If treated by an outside physician, bring a statement from him if an excuse for absence from class is expected.

Grading System

Grades are computed on a quality point system as follows:

<i>Grade</i>	<i>Interpretation</i>	<i>Quality points per semester hour</i>
A	Excellent	4
B	Good	3
C	Average	2
D	Passing but not satisfactory	1
F	Failure	0
Inc.	All required work not turned in or permission granted to repeat final examination	—

When reporting final grades the instructor shall add (+) or (—), when appropriate, to letter grades which fall above or below the mid-point of the letter grade range. Such additions will not affect the quality point calculations but will be recorded on the permanent record. This system allows more realistic evaluation in regard to scholarship aid and job recommendations than is possible with straight letter grades.

Semester Grade Point Average

To compute the semester grade point average, the total points earned will be divided by the total credits carried. Credits carried are defined as total credits earned and failed. Grade point averages will be recorded to one decimal place. For example, averages from 2.65 to 2.74 will be recorded as 2.7. A student with an Inc. will not have his semester quality point average computed until this mark has been converted to a letter grade except in those cases where obvious dismissal would be involved.

Cumulative Average

To compute the cumulative grade point average, the total points earned will be divided by the total credits carried—the sum of total credits earned and failed. If a student fails a course and then repeats it, quality points will be computed on the basis of the new grade.

Dismissal

The Stockbridge Advisory Committee meets regularly with the Director to

review academic performance of students. Dismissal for academic reasons is based on regulations administered by this committee. A student will be dismissed if his *cumulative* quality point average is less than 1.45 at the end of the first semester, 1.55 at the end of the second semester, or 1.95 at the end of the third semester.

Graduation Requirements

A cumulative quality point average of at least 1.95 is required for graduation. Attendance at graduation is required of all seniors before the diploma will be awarded.

No students will be graduated unless all bills due either to the University or to private individuals, business concerns, or a fraternity have been paid on or before the Wednesday preceding graduation exercises.

Seniors who have taken out University loans will have their diplomas held as collateral until these are paid in full. This in no way interferes with the privilege of graduation.

EXPENSES

Tuition

Residents of Massachusetts are charged \$100 per semester. Tuition per semester for non-residents or non-citizens of the United States is \$300. Massachusetts residents are required to file a statement signed by either town or city clerk stating that the applicant (in case he is of voting age) or the applicant's parent is a legal resident. (See Form II in back of catalogue).

Variation in Course Charges

There is a difference in charges for the freshman year depending on the length of the placement period.

Summary of Expenses Estimated:

	FIRST YEAR		SECOND YEAR
	(1½ Semesters)	(2 Semesters)	(2 Semesters)
Tuition (Citizens of Mass.)	\$150.00	\$200.00	\$200.00
Room in University Dormitory	157.00	200.00	200.00
Board at University Commons (5-day week)	260.00*	326.00*	326.00*
Books, Stationery, and Other Supplies	100.00	100.00	100.00
Athletic Fee	22.50	30.00	30.00
Student Health Fee	22.50	30.00	30.00
Student Union Fee	15.00	20.00	20.00
Student Health Insurance—12 months' Coverage (Optional)	16.00	16.00	16.00
#Student Taxes	23.75	23.75	26.00
	\$766.75	\$945.75	\$948.00

*7-day board plan is available: 1½ semesters \$320.00 — 2 semesters \$405.00. A weekend meal ticket may be purchased (\$2.80) covering 4 meals: Breakfast and Dinner on Saturday; Dinner and Supper on Sunday.

The figures for board and room are estimates based on prevailing prices and may be subject to change.

Student Taxes:

	FIRST YEAR	SECOND YEAR
Class Tax	\$ 2.00	\$ 2.00
Cap and Gown Fee	—	3.25

Identification Fee	1.00	1.00
Stockbridge School Activities	3.00	2.00
Stosag (School Yearbook)	7.00	7.00
Student Activities Tax Fund (University)	10.75	10.75
	\$23.75	\$26.00

Estimated cost of required field trips during the two years, \$15.00 - \$50.00.

Advance Payment

New students will be expected to make an advance payment of \$15 to the treasurer of the University as soon as they are notified by the director that they are accepted for admission. This will be considered as first payment on registration fees which will be due at time of matriculation in the fall. It is not refundable and will be considered as payment for admissions and registration expense if the student does not matriculate.

Refund of Student Payments

Prepaid tuition and fees will be refunded to students withdrawing as follows:

- | | |
|---|-----|
| A. Within the first two weeks from the date of registration | 80% |
| B. Within the third week | 60% |
| C. Within the fourth week | 40% |
| D. Within the fifth week | 20% |
| E. After fifth week, no refund. | |
| Prepaid board—pro rata refund. | |
| Prepaid room rent—no refund. | |

When Payments Are Due

In accordance with policy established by the board of trustees, all charges for tuition, fees, board and room rent in University dormitories are due at the beginning of each semester and must be paid on or before the opening date of each semester. Bills will be rendered in advance by the University treasurer and payment may best be made by mail. Students may not attend classes until registration charges are paid.

Late Registration

Any student who does not complete his registration, including payment of semester charges, on the regular registration days will be required to pay a fine of \$5.00.

Rooms for Men

All men except commuters, married students, or those living at the Stockbridge Fraternity (Alpha Tau Gamma) are required to live in University dormitories. If dormitory facilities are scarce late applicants may have to find a room in a private home in Amherst.

Rooms for Women

All women except commuters or married students must live in University dormitories. Under the supervision of the Dean of Women, life in each dormitory is directed by a council of student leaders, advised by a full-time house mother, so that conditions are conducive to good study and living habits.

Note

In all dormitories, whether for men or women, the student must supply a study lamp, a metal waste basket, bed linen, pillow and blankets. Dormitories are open at 1:00 p.m. on the Sunday preceding registration.

Board

All freshmen living in dormitories as well as senior women in dormitories must board at the University Commons. Those living at Alpha Tau Gamma—whether freshmen or seniors—may board at the fraternity. Senior men living in dormitories may take their meals at the Commons or make other arrangements if they choose to do so. Preparation of food in dormitory rooms is not permitted under any circumstances.

Laboratory Charges

Some departments—Agronomy, Agricultural Engineering, Entomology and others—have laboratory charges which range from two to seven dollars per course. These charges must be paid at the University Store before the student is admitted to the course.

Student Cars

Freshmen living in dormitories are not permitted to have cars. Seniors have this privilege but the practice is not encouraged. All those permitted to have cars on campus must register their vehicles with the Campus Police at the time of registration or immediately after bringing their cars to the University. Driving to and from classes is strictly prohibited except for those with severe physical limitations.

BOOKS AND SUPPLIES

For the convenience of students, the University maintains a store service in the Student Union building. Here all textbooks may be purchased at cost plus transportation charges. Students are informed at the first class session in each course what books are required and must secure individual copies according to order list sent in by instructor.

There is little opportunity to secure secondhand books because most students find the texts assigned of value to retain as reference sources after completing a course.

PART-TIME EMPLOYMENT

Students desiring financial aid from the University in the form of part-time employment, are required to file applications with the Placement and Financial Aid Services not later than May 15 of each year. Incoming freshmen are not encouraged to work the first semester unless a dire need exists.

These application forms are used to determine the comparative need and qualifications of the applicants. No student is eligible for any kind of financial assistance from the University unless he or she has filed the required form and has been certified as deserving by the Placement and Financial Aid Services staff. Application forms may be secured at the office of Placement and Financial Aid Services, Machmer Hall.

The placement training period between the first and second year usually enables a student to earn from \$500 to \$1000 depending upon his skill and general ability, and the type of work. This will pay a large part of the second year expenses.

Prospective students should understand that the above estimates cover expenses which may be called strictly University expenses, and that there are other financial obligations voluntarily assumed by students which they should expect to meet. Total cost for a full academic year runs between \$1200 and \$1400. Freshmen with only one and one-half semesters in residence require from \$900 to \$1050. Estimates for clothing, laundry, entertainment and travel are included in these cost figures.

LOANS

Bartlett Loan Fund

This fund was established by the F. A. Bartlett Tree Expert Company of Stamford, Connecticut. It is available for short term loans to students majoring in Arboriculture. Apply at the Director's Office in Stockbridge Hall.

Food Management Loan Fund

Money to establish this fund was donated by the University Stewards Club. Food Management majors may borrow from it on a short term basis. Apply at the Director's Office in Stockbridge Hall.

Stockbridge Emergency Loan Fund

This loan fund has been built up by class gifts over the years—classes of 1951, 1952, 1953, 1955, 1956, 1957, 1958, 1959, and 1961. It provides loans for short periods of time, one week to one month, to any student in an emergency situation. There are no interest charges and application should be made in the office of the Director.

The Vincent Goldthwait Loan Fund

This fund was established by Dr. Joel E. Goldthwait, U. of M. 1885, of Boston, as a memorial to his son who died in 1922 during his junior year at Harvard. Its purpose is to aid worthy students in financial difficulties. Amounts in excess of \$200 are rarely granted and most loans range from \$50 to \$150.

A regular promissory note must be executed, endorsed by parent or guardian, and repayment may be made within any reasonable period after graduation up to one year. There is no interest charge.

All requests for such aid should be made in person to the Assistant Director of Placement and Financial Aid Services who is responsible for the administration of all loans. He will also describe other loan arrangements upon request.

SCHOLARSHIPS

Prospective senior students should file scholarship applications with the Assistant Director of Placement and Financial Aid Services before starting placement training in the spring. First year students will receive a scholarship application blank when notified of their acceptance if requested prior to January 15.

Ascension Farm School Scholarships

Trust funds from the Ascension Farm School Corporation of Great Barrington were given to the University trustees in 1952 the income from which shall be used to provide for the "education and training in agriculture of boys resident in Western Massachusetts," as stated in its original charter. This makes possible the award of scholarships to men students residing in Hampden, Hampshire, Franklin, and Berkshire counties with special consideration to be given applicants from the last named county.

The Margaret Fitz Barnes Scholarship

A \$100 scholarship awarded annually to a young man or young woman interested in landscape operations who is in need of financial aid and has been accepted or is enrolled in the Stockbridge School of Agriculture.

The Boston Market Gardeners Association Scholarship

An annual scholarship of \$100 to be awarded to a deserving student majoring in vegetable crops. This scholarship may be awarded either to a four-year or Stockbridge student.

H. B. Cantor Foundation Scholarship

A \$500 scholarship for students majoring in food management. Students must be recommended by the University Scholarship Committee. This scholarship may be awarded to either a four-year or a Stockbridge School of Agriculture student.

Ellsworth Milton Statler Foundation Scholarships

Two \$500 scholarships for students majoring in food management. Students must be recommended by the University Scholarship Committee and approved by a Committee of the Statler Foundation. These scholarships may be awarded to either four-year or Stockbridge School of Agriculture students.

Boston Steward's Club Scholarships

Annual scholarships of \$500 are awarded to deserving students majoring in food management. Students must be recommended by the University Scholarship Committee and approved by the Boston Steward's Club. These scholarships may be awarded to either four-year or Stockbridge School of Agriculture students.

Lotta Crabtree Scholarships

By special arrangement with the Lotta Crabtree Foundation trustees of Boston, a number of scholarships are available to Stockbridge students.

Holyoke and Northampton Florists' and Gardeners' Club Scholarship

An annual scholarship of \$100 to be awarded to a senior student (man or woman) in the Stockbridge School who is majoring in floriculture or landscape operations.

The V. A. Rice Scholarship Fund

A \$100 scholarship for a worthy student majoring in animal science—either Stockbridge or four-year.

Wilbur H. H. Ward Scholarships

The Wilbur H. H. Ward Fund is administered by a board of trustees independent of the University. Applicants for these scholarships should write to Allen S. Leland, Stockbridge Hall, University of Massachusetts, Amherst, Mass.

Farm Bureau Scholarship

The Hampshire County and the Berkshire County Farm Bureaus each offer a \$100 scholarship to a Massachusetts farm boy or girl to assist in obtaining a higher education.

CONVOCATION

No classes are scheduled on Wednesdays from 11:00 A.M.-12:00 M., with the idea that a convocation may be held during this hour. On occasion a convocation for either freshmen or seniors will be compulsory. The number of convocations held per year will be based on recommendations from the Student Senate.

STUDENT ACTIVITIES

Student Union Building

The Student Union is available to all students for recreational purposes. Among other things it includes a large ballroom for dinners and movies, the University Store, offices for student activities, offices for the University chaplains—Jewish, Catholic, and Protestant—meeting rooms and lounges, and dining rooms.

Commodity Clubs

All major departments sponsor commodity clubs which hold regular meetings devoted to professional improvement as well as social activities. Stockbridge students are urged to join a club of their choice.

Stockbridge Senate

Members of both classes are represented on the Senate. This body serves as a general committee on student government and aids in maintaining the best traditions and customs of the school.

Yearbook

The Stockbridge yearbook is called STOSAG and is published annually by the senior class.

Fraternity

There is one social fraternity, Alpha Tau Gamma, with membership limited to Stockbridge students.

Progress Banquet

A Progress Banquet is held once a year, usually in March, at which time scholastic and athletic awards are announced.

Bowditch Speaking Contest

Seniors in the Stockbridge School are entitled to compete in the annual

Nathaniel A. Bowditch Speaking Contest which is held early in May. Cash prizes of \$25, \$15, and \$10, are provided by the Massachusetts Society for the Promotion of Agriculture.

Scholastic Society

A Stockbridge Honorary Scholastic Society called "*Stosag*" was established in 1935 to encourage high scholarship. Students whose record for the first three semesters is 3.4 quality points or better, are elected to membership in the society each March. Engraved certificates are awarded to members of the graduating class who have achieved this distinction.

Athletics and Physical Education

The School has its own separate athletic program with regular schedules in football, basketball, hockey, and riflery. The official insignia is the letter S for football, basketball, and hockey, and the letter S with crossed rifles for riflery.

The football, basketball, and hockey teams play mostly with preparatory school teams in the area. The rifle team engages in postal matches with collegiate teams throughout the country, and in shoulder-to-shoulder matches with college freshman teams in the New England area.

A physical education building containing a swimming pool, an indoor cage 150 by 180 feet for all kinds of sports and games, and locker room and shower bath facilities are provided. Individual equipment is supplied to all members of the athletic teams and for students wanting general recreation. Students may avail themselves of these facilities during limited periods in the school year when not assigned to other activities.

STUDENT RELATIONS

The customary high standard of University men in honor, manliness, self-respect, and consideration for the rights of others constitute the standards of student deportment.

Any student known to be guilty of dishonest conduct or persistent violation of rules must be reported by the instructor to the director for discipline.

The privileges of the University may be withdrawn from any student at any time if such action is deemed advisable.

It should be understood that the University, acting through its president or any administrative officer designated by him, distinctly reserves the right not only to suspend or dismiss students, but also to name conditions under which students may remain in the institution. For example, if a student is not doing creditable work he may not only be disciplined, but he may be required to meet certain prescribed conditions in respect to his studies, even though under the foregoing rules his status as a student be not affected. The same provision applies equally to the matter of absences.

Similarly, also, it applies to participation in student activities. Though this will ordinarily be governed by the rules as already laid down, yet if in the judgment of the University authorities a student is neglecting his work on account of these activities, the privilege of participating in them may be withdrawn for such time as is considered necessary. Moreover, it may be withdrawn as a punishment for misconduct.

HEALTH SERVICE

Medical care is provided through the University Health Services. The center of activities is the new Infirmary where there are facilities for complete out-patient care, available 24 hours daily. Included are services of a staff of physicians, nurses, technologists, and counselors, who are prepared to furnish necessary care at any time. Services are augmented by modern x-ray and laboratory facilities.

In addition, the Infirmary contains 87 beds, and modern equipment for the care of bed patients.

All students are assessed a student health fee which currently has been set at \$15.00 per semester. In return for this fee, each student is entitled to receive:

- (A) Unlimited out-patient visits during usual hours of the Out-patient Department.
- (B) Emergency care at any time whenever indicated on the campus. Dormitory calls are discouraged. It is felt that only in very few situations is it not advisable for a student to be brought to the Infirmary where much more adequate care is available.
- (C) Unlimited service within the competence of the Health Services staff whenever rendered on the campus; no additional charge is ever to be made for any such service. In the case of serious emotional illness, the services of the mental hygienist may have to be limited in consideration of the needs of other students.
- (D) Medication is provided from the Infirmary supplies. It is intended that a charge will be made only for basic medications which students have been taking prior to entrance (insulin, etc.), those usually expensive medications taken for long periods (steroids, etc.), and those ordered specifically for an individual student (allergy materials, etc.).
- (E) X-ray and laboratory examinations are available at the Infirmary as ordered by the staff physicians.
- (F) Unlimited bed-patient care in the Infirmary as long as registered as a student, and when such care is directed by the staff physicians.

A supplementary insurance program is available at an unusually favorable rate. This will provide for major surgical care, medical or surgical hospital and physician's care when not in Amherst, out-patient x-ray service not available through the Infirmary, and ambulance service. All students will be billed for this insurance and all are urged to accept it without requesting waiver.

It is the aim of the Health Services to promote optimum health throughout the University and to minimize for each student the possibility of loss of time for reasons of health. In addition to providing medical care, the Health Services attend to all matters of health and safety of the University Community. Many of its activities are basically preventive in nature. In this connection it is urged that all students avail themselves of the help of the Health Services Staff as soon as even a minor need is evident. Many major disabilities are prevented by timely attention to apparently minor ailments.

GOODELL LIBRARY

The Goodell Library forms the central unit of the University Library and contains the largest portion of the book collections of the University, numbering 234,873 books and periodicals. A central card catalog lists all books to be found in the University. The agricultural and scientific collections are especially strong in the literature of entomology, botany, chemistry, horticulture, land architecture, soil science and animal husbandry. In addition there are extensive collections in literature, history, economics and sociology. There are over 1500 current periodical titles (popular, literary, and scientific) subscribed to by the Library. The publications of the several state agricultural experiment stations are well represented in the collections. The Library is also a depository for a large portion of the publications of the United States Government, including Department of Agriculture publications.

The Library hours during regular term time are Mondays through Fridays, 8:00 A.M. to 10:00 P.M.; Saturdays, 8:00 A.M. to 4:30 P.M.; and Sundays and holidays, 2:00 P.M. to 10:00 P.M.

Goodell Library is named in memory of Henry Hill Goodell, President of the University from 1886 to 1904 and Librarian from 1886 to 1889.

An addition to the library has been completed recently and provides large reading areas to seat about 1,000 students. The book stack has space for 460,000 volumes in addition to the 200,000 volume capacity of the older Goodell building. The reference collection and circulation desk of the University Library are now housed on the 5th level of the new addition. A special microfilm reading area and rooms for special collections are also provided.

OPPORTUNITIES FOR WOMEN

Somewhere around three to five percent of the Stockbridge students are women—for the most part majoring in Floriculture, Animal Science, and Food Management with an occasional major in Poultry Science or Forestry. Graduates with strong determination and a liking for their vocation have made successful careers. Others, even though they have not made a career in the field of their major, have developed a lasting interest or hobby in something they both like and understand.

EMPLOYMENT AFTER GRADUATION

The University does not guarantee employment following graduation to students registered in any of its courses, but through the Placement and Financial Aid Services it has an opportunity to recommend students for a large number of positions. A record is kept of each student's work and experience and of his success in positions for which he has been recommended after he has finished his course. Opportunities for trained men and women, especially those who have had experience, are good.

A student desiring a recommendation from the University must meet the following conditions:—

- (1) He must be of good character.
- (2) His previous record must be good.

(3) His work in all courses must be satisfactory.

Students who have not previously had a considerable amount of practical experience cannot, as a rule, be recommended for positions of responsibility. This is especially true of the better positions for which managers or superintendents are wanted.

SUMMER PLACEMENT

The Director is in charge of arranging summer placement jobs for all freshmen. It cannot be guaranteed that every student will be placed but in normal times jobs are found for all.

Positions are secured that will enable the student to gain practical experience in his particular field. Wage rates vary in different localities but the student may expect to earn a reasonable amount. However, the purpose of the placement job is to gain experience rather than to expect a high monetary return.

It is urged that all freshmen arrange an interview with the Director prior to the Christmas vacation so that his qualifications and the type of work he wishes to do may be determined. No final arrangements for placement training may be made prior to consulting with the Director.

Students are required to complete the training period without unnecessary absences. No job transfers are to be made without the permission of the Director nor may a position be given up until the Director has been notified.

A monthly report must be furnished on the form supplied and submitted not later than the fifth of each month. Students must complete in a satisfactory manner all reports as required by the various departments and those failing to complete all placement requirements are not permitted to take the work of the second year.

ANIMAL SCIENCE

HEAD OF DEPARTMENT: PROFESSOR DENZEL J. HANKINSON. PROFESSOR

FOLEY, ASSISTANT PROFESSOR BRUCE, ASSISTANT PROFESSOR BUCK,

ASSISTANT PROFESSOR MACFADDEN

A major program of study in the Department of Dairy and Animal Science.

Animal Science in this School, refers to the breeding, feeding and management of dairy cattle, beef cattle, horses, sheep and swine.

The purposes of the curriculum in animal science are (1) to provide the student with a thorough understanding of the basic principles involved in the development of more efficient, productive and useful animals: these principles are those involved in the biology of animal reproduction, the chemistry of animal growth and nutrition, and the economics of livestock production; (2) to show the practical workings of these principles in the selection, feeding and management of the various classes of livestock and (3) to provide practice in judging, fitting, showing and general management of livestock as well as the production of milk and other products, and the slaughtering, curing and marketing of meat products.

The University dairy herd comprises about 150 animals in the Ayrshire, Guernsey, Holstein and Jersey breeds. In beef cattle, a herd of Aberdeen-Angus and a herd of Herefords are maintained; in sheep, flocks of Shropshires and Dorsets; in swine, a herd of Chester Whites; and in horses, a small band of Morgans.

The University Farm of about 130 acres is handled primarily as a livestock farm, producing pasture, hays and silages for livestock feeding. The farm is equipped with up-to-date machinery for agricultural production. The farm and barns, animals and accessories comprise the laboratory facilities.

The Charles H. Hood Dairy Foundation Prize for Animal Science Seniors

The Charles H. Hood Dairy Foundation Prize of \$200 is awarded annually to seniors who in the judgment of a faculty committee have made an outstanding scholastic record in this major course and who because of their practical qualifications, personality and character, seem best qualified to receive this honor.

Job Opportunities

Owners and operators of dairy farms; farm managers; superintendents or foremen; herdsman in various kinds of livestock enterprises; dairy herd association testers; inseminators in artificial breeding units; businesses allied to agriculture such as farm cooperative fieldmen, sales and service men for feed, fertilizer and farm machinery companies.

Animal Science

First Year

First Semester		Second Semester	
(Fifteen Weeks Resident Instruction)	<i>Crs.</i>	(Fifteen Weeks Resident Instruction)	<i>Crs.</i>
Agricultural Economics S-1 (Practical Economics)	3	followed by three months placement Training)	
Agronomy S-1 (Soil Management)	3	Agricultural Engineering S-3 (Farm Shop)	3
Animal Science S-1 (Introductory Animal Science)	2	Agronomy S-2 (Fertilizers) First half of Semester	1½
Bacteriology S-1 (Bacteriology and Rural Hygiene)	3	Animal Science S-2 (Principles of Feeding)	5
Dairy Technology S-1 (General Dairying)	3	English S-1 (Business English)	3
Mathematics S-1 (General Course)	2	Entomology S-12 (Livestock and forage Crop Insects) Second half of semester	2
Practical Science S-7 (Primarily Chemistry)	2	Poultry Science S-10 (General Course)	3

Second Year

First Semester		Second Semester	
(Fifteen Weeks Resident Instruction)	<i>Crs.</i>	(Fifteen Weeks Resident Instruction)	<i>Crs.</i>
Agricultural Economics S-15 (Farm Management)	4	Agricultural Engineering S-9 (Farm Structures and Drainage)	4
Agricultural Engineering S-1 (Farm Power)	3	Agronomy S-4 (Field Crops)	3
Animal Science S-3 (Animal Breeding)	5	Animal Science S-4 (Livestock Production)	5
Animal Science S-5 (Farm Meats)	3	Animal Science S-6 (Dairy Cattle and Milk Production)	5
Speech S-1	1	Speech S-2	1
Veterinary Science S-1 (Animal Sanitary Science)	3		

Animal Science S-1. (Introductory Animal Science) I.

Introduces the student to the broad field of animal science and prepares him

for subsequent major courses. Emphasis is placed on elementary animal physiology including digestion, circulation and endocrinology.

1 class hour and 1 2-hour lecture demonstration period a week. Credit, 2.

MR. BRUCE.

Animal Science S-2. (Principles of Feeding) II.

Includes a study of the organs of digestion, the digestion and absorption of feeds, the classification and characteristics of the common feed-stuffs, the utilization of feeds in maintenance, growth, work, fattening, meat production and milk production. Some time will be spent on the importance of minerals and vitamins. Methods of calculating balanced rations, feeding standards and feeding practices will be studied. A visit to a feed mill is a requirement of this course.

Textbook: Morrison, "Feeds and Feeding."

4 class hours and 1 2-hour laboratory period a week.

Credit, 5.

MR. MACFADDEN.

Animal Science S-3. (Animal Breeding) I.

Planned to acquaint the student with reproductive physiology and genetics, and to show how such knowledge may be utilized through genetic analyses, selection, and systems of breeding for the development of more efficient, productive and useful animals. A field trip is made to the Massachusetts Selective Breeding Association.

Textbook: Rice, Andrew and Warwick, "Breeding Better Livestock."

3 class hours and 2 2-hour laboratory periods a week.

Credit, 5.

MR. BRUCE.

Animal Science S-4. (Livestock Production) II.

Deals with the management of beef cattle, horses, sheep and swine with emphasis on their place in New England. Recommended practices in all phases of production will be discussed and practical experience gained in laboratories. Trips to other purebred livestock establishments in New England will be required during the semester. The cost of transportation will not exceed \$5.00. Four students in this course will be selected to participate in the New England two-year school judging contest.

Textbook: Ensminger, "Animal Science."

3 class hours and 2 2-hour laboratory periods a week.

Credit, 5.

MR. BRUCE.

Animal Science S-5. (Farm Meats) I.

Includes a survey of the meat packing industry with discussions on classes and grades of livestock and meat, meat inspection, meat preservation and allied topics. Laboratories are devoted to the slaughtering, dressing and cutting of beef, lamb, pork and veal. Techniques of farm slaughter are emphasized. A one-day trip to a large packing house (approximate cost \$7.00) is a required part of the course.

Textbook: Ziegler, "The Meat We Eat." Special equipment needed for this

course includes, knives with sheath, boots and sharpening stone—estimated cost \$12.00.

1 class hour and 1 4-hour laboratory period a week.

Credit, 3.

MR. BUCK.

Animal Science S-6. (Dairy Cattle and Milk Production) II.

Treats all phases of dairy cattle production and management. The student is provided with an opportunity to study and seek the solution to the various economic, nutritional, genetic and managerial problems concerned in successful dairying. Lectures will be supplemented with talks by specialists. Laboratory will consist of a detailed study of methods used on the University farm, with practice in the various skills necessary for the herdsman or showman. A dairy cattle judging team will represent the Stockbridge School of Agriculture in the New England two-year school judging contest. Special judging laboratories will be scheduled to train this team.

Inspection trips to dairy farms will be required during the spring semester. The cost for transportation will not exceed \$15.

Textbook: Henderson and Reaves, "Dairy Cattle Feeding and Management."

3 class hours and 2 2-hour laboratory periods a week.

Credit, 5.

MR. FOLEY.

Animal Science S-8. (Meat and Meat Products) II.

This course covers the fundamental principles involved in evaluation, purchasing, and efficient utilization of meat and meat products. The marketing of livestock and meat is emphasized. Laboratory periods will be devoted to meat evaluation, meat identification, the preparation of wholesale and retail cuts of meat, and the development of cutting techniques. An actual slaughtering demonstration will also be included. A one-day field trip to a large packing plant (approximate cost \$7.00) is a required part of the course.

Textbook: Ziegler, "The Meat We Eat." Special equipment needed for this course includes knife, sheath, sharpening stone—estimated cost \$5.00.

1 class hour and 1 4-hour laboratory period a week.

Credit, 3.

MR. BUCK.

Animal Science S-9. (Special Dairy Cattle Course) I.

For dairy technology seniors and poultry science freshmen. This course will consider the advantages and disadvantages of dairy farming. The principles of genetics and the art of breeding better dairy cattle will be emphasized. The balance of the course will include basic principles of dairy cattle feeding as well as profitable management of the dairy herd. Laboratories will be devoted to various exercises and problems concerned with the feeding, breeding and management of dairy cattle. A one-day field trip to successful dairy farms is required in the course. Estimated cost \$5.

Textbook: Henderson and Reaves, "Dairy Cattle Feeding and Management."

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

MR. FOLEY.

Note—Students in this major are expected to be able to milk. Opportunity to learn or practice will be provided by arrangement.

ARBORICULTURE

HEAD OF DEPARTMENT: PROFESSOR JOHN H. LILLY. ASSOCIATE PROFESSOR KING, ASSISTANT PROFESSOR ROHDE

Arboriculture, the care of shade and ornamental trees, is becoming more important in Massachusetts as the citizens realize the necessity of trees in everyday life. It includes tree planting; large tree moving; diagnosis and treatment of tree disease, defects, and mechanical injuries; identification and control of tree insect pests; fertilizing; pruning and repair of storm or otherwise damaged trees; and removal of dead or undesirable trees.

This growing appreciation of the value of trees has led to the development of organizations to supply tree maintenance service. These firms desire trained men. All Massachusetts towns are required to elect tree wardens. At present there are over three thousand men actively engaged in municipal and private tree care in Massachusetts and the future is almost unlimited on a state basis. Nationally, over 800 million dollars is spent annually on shade and ornamental trees to supply these needs.

The University offered the first course in the country on shade tree care in 1895, and now offers one of the few complete two-year courses in arboriculture in the United States. Annually in March, a Conference of one week's duration for tree wardens, arborists and utility men is held on the campus. The programs of the conferences are of interest to students in this course.

The University campus of 700 acres has a wide variety of trees of all ages with which the student becomes acquainted, and serves as a laboratory for problems similar to those one will have to meet in practice. The research laboratory in shade tree diseases for the state is also located on the campus.

The Massachusetts Arborists Association and the Massachusetts Tree Wardens and Foresters Association have approved this course as a basic training program.

Those electing arboriculture must register one week prior to the opening of the fall semester for the preliminary training period. Applicants will be notified of the date of registration. This one-week period before the start of regular class work will be used for intensive training in the use of ropes, climbing, and the use of knots and safety practices. Eight hours a day will be given over completely to this purpose. Only those who qualify in this preliminary program may continue the arboriculture course. All students applying for the course must have a doctor's certification that they are physically fit. Any heart ailment or other serious weakness automatically disqualifies an applicant.

Field trips will be required during the two years at an estimated cost of \$40, other than those conducted during laboratory periods.

A placement training period is required between the freshman and senior years.

Job Opportunities

Operators, foremen and salesmen for arboriculture firms, utility line clearance foremen, deputy tree wardens or tree wardens in towns and cities, tree care in estates, parks, state highways, turnpike authorities, college campuses or grounds of public institutions, or developing one's own service organization for the practice of arboriculture.

An accident insurance policy will be required of all prospective students. Such a policy will be available at the University at time of registration.

Transfer to the University

The Department of Entomology and Plant Pathology, of which the arboriculture program is a part, offers four-year curricula in entomology and plant pathology, and electives may be taken in courses closely related to arboriculture. Stockbridge students who maintain a B average or better may transfer to these University programs by passing an examination prepared for this purpose.

Arboriculture

First Year

First Semester		Second Semester	
(Fifteen Weeks Resident Instruction)	<i>Crs.</i>	(Eight Weeks Resident Instruction followed by Five Months Placement Training)	<i>Crs.</i>
Agronomy S-1 (Soil Management)	3	Agricultural Engineering S-11 (Grounds Equipment)	1½
Agrostology S-5 (Basic Factors, Construction and Maintenance of Fine Turf Areas)	3	Agronomy S-2 (Fertilizers)	1½
Arboriculture S-0 (Tree Climbing — Special Qualifying Course)	0	Arboriculture S-2 (Continuation of S-1)	2
Arboriculture S-1 (Practices and Policies)	4	Entomology S-4 (Insect and Related Pests of Fruit, Shade and Ornamental Trees and Shrubs)	1½
Botany S-1 (General Botany)	3	Fruit Growing S-2 (Orchard Pruning)	1½
Landscape Operations S-1 (Tree Identification)	3	Floriculture S-12 (Plant Propagation)	2
Speech S-1	1	Plant Pathology S-2 (Plant Diseases)	1½
		Speech S-2	1½

Second Year

First Semester		Second Semester	
(Fifteen Weeks Resident Instruction)	<i>Crs.</i>	(Fifteen Weeks Resident Instruction)	<i>Crs.</i>
Arboriculture S-3 (Diagnosis and Control)	3	Agricultural Economics S-3 (Introductory Accounting)	3
Arboriculture S-7 (Shade Tree Surveys and Cost)	4	Arboriculture S-6 (Shade Tree Spraying)	3
English S-1 (Business English)	3	Arboriculture S-8 (Shade Tree Surveys and Cost Estimates)	4
Entomology S-5 (Control of Insect and Related Pests of Shade and Ornamental Trees and Shrubs)	3	Landscape Operations S-8 (Topography of Construction)	3
Forestry S-3 (Management of Small Woodlands)	4	Landscape Operations S-12 (Shrub Identification)	3
Landscape Operations S-7 (Surveying and Mapping)	3	Practical Science S-8 (Primarily Physics)	2
Practical Science S-7 (Primarily Chemistry)	2		

Arboriculture S-0. (Tree Climbing) I.

For one week previous to the regular opening of school, all students electing this major must attend a special qualifying course in tree climbing. This course will be conducted on the campus for eight hours each day for one week to acquaint the student with ropes, tools and climbing techniques. To be enrolled in the arboriculture major all students must pass this qualifying tree climbing practice.

MR. KING.

Arboriculture S-1. (Practices and Policies) I.

Material covers pruning, cabling, bracing, fertilization and line clearance.

Laboratory work in the application of class discussion.

2 class hours and 1 4-hour laboratory period a week.

Credit, 2 or 4.

MR. KING.

Arboriculture S-2. (Continuation of S-1) II.

Soils, their origin structure and function as pertaining to tree growth and development. Fertilizers—use, sources, applications and functions of elements in the growth and development of a tree are covered. Common tree diseases and treatment and simple cavity treatments are included.

2 class hours and 1 4-hour laboratory period a week.

Credit, 2.

MR. KING.

Arboriculture S-3. (Diagnosis and Control) I.

Individual and class assignments in the diagnosis of infectious and non-infectious diseases and the proper treatments and corrective measures. Analysis of symptoms and effects common to infectious diseases and environmental influences. Methods and techniques used to determine the causes and their treatments.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.

MR. ROHDE.

Arboriculture S-6. (Shade Tree Spraying) II.

Spray materials, equipment, and charts for shade tree insects, fungi, and weed control. The laboratory periods will be devoted to the actual application of spray material in the field.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.

MR. KING.

Arboriculture S-7 and S-8.

(Shade Tree Surveys and Cost Estimates) I. II.

The use and determination of shade tree surveys. Time and cost estimates and shade tree maintenance programs as determined by shade tree surveys. City planting and planning programs essential for city and street care and development. Line clearance and tree laws of various states. Attendance at Plant Pathology seminar is required.

2 class hours and 1 4-hour laboratory period a week.

Credit, 4.

MR. KING.

ONE-YEAR ARBORICULTURE COURSE

ASSOCIATE PROFESSOR KING, ADVISOR

This course is available to a limited number of Stockbridge graduates (landscape operations, forestry, or floriculture are prerequisites) who wish to take one year of arboriculture. The courses to be taken will be those in the arboriculture major not covered by the above major in which the student graduated. Prospective students must show ability to climb and must complete three months' placement before starting this course.

Private and municipal tree organizations usually prefer a graduate who has

studied both horticulture and arboriculture since most of these organizations do general landscaping, nursery and tree work.

A one-year certificate is granted upon satisfactory completion of the year's work, subject to the scholastic requirement of the school. The certificate is awarded at the Stockbridge School graduation exercises.

DAIRY TECHNOLOGY

HEAD OF DEPARTMENT: PROFESSOR DENZEL J. HANKINSON. ASSOCIATE

PROFESSOR POTTER, ASSISTANT PROFESSOR EVANS

A major program of study in the Department of Dairy and Animal Science.

The two-year course in dairy technology provides the student with an understanding of the handling and processing of milk and its products from the time the milk leaves the cow until it reaches the consumers' table. Students electing this course are preparing themselves for future work in the processing of dairy products and its related fields.

All dairy technology courses are given in Flint Laboratory, a building devoted specifically to the handling, processing, and testing of milk and its products. The building is well equipped with adequate facilities to provide classroom instruction in dairy processing. Commercial scale operations exist in processing milk and ice cream.

The market milk department contains a homogenizer, high temperature short time and vat pasteurizing equipment, a clarifier-separator, a vacuum bottle filler and capper, rotary can washer and automatic soaker type bottle washer.

For the manufacture of ice cream, the equipment includes a pasteurizing vat, homogenizer, cooler, batch freezer, continuous freezer, fruit feeder, and small scale facilities for making popsicles and fancy ice cream.

The by-products rooms include a churn, cheese vats and presses, and a vacuum pan for condensing milk. The testing laboratories are well equipped for performing the Babcock, Mojonnier and other tests for determining the chemical and bacteriological quality of dairy products.

Job Opportunities

Skilled workers in wholesale and retail dairy plants including laboratory technicians, pasteurizer operators, ice cream mix makers, freezer operators, cheese-makers, salesworkers, and by-products manufacturers; also dairy equipment and supply salesmen, fieldmen and Dairy Herd Improvement Association testers. Such training supplemented with sufficient practical experience may lead to positions such as assistant plant superintendents and plant managers.

Field trips will be required during the two years at an estimated cost of \$20 per student.

While working in the dairy laboratories, white suits and rubber footwear are required, at an estimated cost of \$10.

Dairy Technology

First Year

First Semester

(Fifteen Weeks Resident Instruction)	Crs.
Agricultural Economics S-1 (Practical Economics)	3
Bacteriology S-1 (Bacteriology and Rural Hygiene)	3
Dairy Technology S-1 (General Dairying)	3
Entomology S-3 (Structural Pests)	2
Food Technology S-3 (Special Products)	2
Mathematics S-1 (General Course)	2
Practical Science S-7 (Primarily Chemistry)	2
Speech S-1	1

Second Semester

(Eight Weeks Resident Instruction followed by Five Months Placement Training)	Crs.
Agricultural Economics S-4 (Elements of Bookkeeping)	2½
Agricultural Engineering S-12 (Food Handling Equipment)	1½
Dairy Technology S-2 (Plant Equipment and Sanitation)	1½
Dairy Technology S-12 (Starters and Cultured Dairy Products)	1
Food Technology S-2 (Fundamentals of Food Preservation)	1½
Home Economics S-2 (Elementary Nutrition)	1½
Practical Science S-8 Primarily Physics)	1
Speech S-2	½

Second Year

First Semester

(Fifteen Weeks Resident Instruction)	Crs.
Agricultural Economics S-13 (Business Management)	3
Agricultural Engineering S-13 (Refrigeration, Heating and Air Conditioning)	3
Animal Science S-9 (Special Dairy Cattle Course)	3
Dairy Technology S-3 (The Ice Cream Industry)	5
Dairy Technology S-5 (Evaluation of Dairy Products)	1
Dairy Technology S-7 (The Cheese Industry)	2
English S-1 (Business English)	3

Second Semester

(Fifteen Weeks Resident Instruction)	Crs.
Agricultural Economics S-22 (Dairy Marketing)	3
Agricultural Engineering S-6 (Dairy Mechanics)	3
Bacteriology S-4 (Dairy Bacteriology)	5
Dairy Technology S-4 (The Fluid Milk Industry)	5
Dairy Technology S-10 (Concentrated Dairy By-Products)	2

Dairy Technology S-1. (General Dairying) I.

Considers the importance of dairying in the United States, and especially in New England, giving the development of dairying from the earliest to the present time. It covers the secretion, composition and properties of milk; reasons for variation in the per cent in fat in different samples of milk; the Babcock test for fat in milk and other dairy products; other common milk tests; the advantage of testing herds, Herd Improvement Association, advanced registry work; the handling of market milk; soft cheese making, ice cream making, and butter making as applied to general farm conditions. The laboratory work consists of testing milk and dairy products for butter fat, solids, and acidity, together with some dairy plant experience in milk handling, butter making, cheese making, and ice cream making.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

MR. EVANS.

Dairy Technology S-2. (Plant Equipment and Sanitation) II.

Lectures are devoted to the cleaning and sanitizing of dairy equipment and its relation to the production of high quality dairy products.

The laboratory work is devoted to methods of determining concentrations of cleaning and sanitizing agents and quality tests of dairy products. In addition to the testing work in the laboratory, students will be scheduled for work in the dairy processing plant in Flint Laboratory in order to become familiar with dairy plant practices and the operation of dairy equipment.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 1½.

MR. POTTER.

Dairy Technology S-3. (The Ice Cream Industry) I.

A study is made of the modern methods of manufacturing the common frozen dairy products (ice cream, sherbets, ices, soft serve products, etc.). Lecture periods are devoted to the ingredients used in ice cream, methods of preparing and processing the mix, the freezing process, packaging, methods of hardening, and distribution of the finished product. The production of the other frozen products is also included.

The laboratory work involves the preparation and standardization of ice cream mixes, the freezing of ice cream and other frozen dairy products, and laboratory tests for butterfat, total solids, etc., as applied to these frozen dairy products.

2 class hours and 2 3-hour laboratory periods a week.

Credit, 5.

MR. POTTER.

Dairy Technology S-4. (The Fluid Milk Industry) II.

In this course attention is given to the necessary essentials in producing high quality milk, the economics of milk production and distribution, care of milk on the farm, transportation, and the various processing steps in the plant from receiving through processing to distribution.

The laboratory work involves numerous chemical and bacteriological quality tests on fluid milk and the operation of equipment used in processing market milk.

2 class hours and 2 3-hour laboratory periods a week.

Credit, 5.

MR. EVANS.

Dairy Technology S-5. (Evaluation of Dairy Products) I.

This course is a study of the grading and evaluating of dairy product quality based upon product flavor, odor, appearance, and body and texture characteristics. Consideration is given to identification and correction of quality defects. Judging of milk, ice cream, butter and cheese.

1 2-hour laboratory period a week.

Credit, 1.

MR. POTTER.

Dairy Technology S-7. (The Cheese Industry) I.

A study of the fundamentals involved in the manufacture and production of market varieties of cheese. The lectures are devoted to the principles of cheese manufacturing and the handling and preparation of various cheese varieties for market. In the laboratory, students receive practice in the manufacture of various types of market cheese.

1 class hour and 1 3-hour laboratory period a week.

Credit, 2.

MR. EVANS.

Dairy Technology S-8.**(Selection and Evaluation of Dairy Products) II.**

This course is arranged for students specializing in food management and food distribution to provide a basis for the proper care and selection of dairy products.

It includes a consideration of the composition, food value, care, selection and use of the different dairy products; a careful study of the methods of storage, marketing, and grading; a survey of processing methods and types of packages; and laboratory practice in testing, evaluating and identifying quality of the various dairy products.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.
MR. POTTER.

Dairy Technology S-10. (Concentrated Dairy By-Products) II.

The lecture periods are devoted to milk and cream quality as related to the finished products, modern methods of making butter, and the manufacture of various concentrated products such as sweetened condensed, evaporated, dried milks, dried whey, etc. The laboratory work is devoted to various phases of butter manufacture from separation of the milk to the packaging of butter, operation of the vacuum pan, the production and laboratory examination of concentrated dairy products.

1 class hour and 1 3-hour laboratory period a week.

Credit, 2.
MR. HANKINSON.

Dairy Technology S-12. (Starters and Cultured Dairy Products) II.

The lectures cover the importance of organisms in dairy fermentations, the propagation of starters, their defects and inhibitors. The use of starters and manufacture of certain cultured dairy products such as buttermilk, sour cream, yogurt, and acidophilus milk will be discussed. The laboratory work will deal with the actual propagation of starters, starter activity tests, and the manufacture of different cultured dairy products.

1 class hour and 1 3-hour laboratory period a week.

Credit, 1.
MR. EVANS.

FLORICULTURE

ACTING HEAD OF DEPARTMENT: PROFESSOR GRANT B. SNYDER. PROFESSOR AND PROGRAM LEADER ALFRED W. BOICOURT, ASSISTANT PROFESSOR ROSS, ASSISTANT PROFESSOR JESTER, MR. GODDARD

A major program of study in the Department of Horticulture.

Students who complete the major in floriculture are fitted primarily for work in commercial greenhouses, horticulture information centers and retail flower stores. After gaining experience such students may be able to start in business for themselves. With courses required of floriculture majors in landscape operations they are also qualified for positions on private estates, in parks and nurseries.

The glass area consists of approximately 20,000 square feet: (1) the French Hall Range of 12,800 square feet, a commercial type of range with

separate houses devoted to various crops; automatic ventilation and automatic steam control; (2) the new Durfee Conservatories, erected in 1954, 5,000 square feet; curved cave construction, steel frame, aluminum members, aluminum barcaps, automatic ventilation and automatic steam control; the five units provide a Propagating House, Geranium House, Tropical House, Foliage Plant House and Camellia House.

Land is available for the outdoor culture of bedding plants and perennial flowers. A 120 foot perennial border and garden wall is used for class study.

Job Opportunities

Skilled workers in commercial greenhouses and on private estates, growing all types of flower crops; wholesale and retail florists, growers, salesmen, managers; flower arrangement work, designers and decorators in retail flower stores; salesmen for florists and home garden supplies.

Students who major in floriculture are required to purchase in the first semester of the first year, Taylor's Garden Dictionary.

Field trips will be required during the two years at an estimated cost of \$20.00.

Floriculture

First Year

First Semester		Second Semester	
(Fifteen Weeks Resident Instruction) Crs.		(Eight Weeks Resident Instruction followed by Five Months Placement Training) Crs.	
Agronomy S-1 (Soil Management)	3	Agronomy S-2 (Fertilizers)	1½
Floriculture S-1 (Garden Materials)	4	Entomology S-2 (Insect and Related Pests of Florists' Crops)	2
Floriculture S-3 (Greenhouse Management)	4	Floriculture S-2 (Greenhouse Construction and Heating)	1½
Landscape Operations S-1 (Tree Identification)	3	Floriculture S-4 (Professional Literature)	½
Speech S-1	1	Landscape Operations S-4 (Landscape Maintenance)	1
Vegetable Crops S-1 (Principles of Plant Culture)	3	Plant Pathology S-2 (Plant Diseases)	1½
		Speech S-2	½
		Vegetable Crops S-2 (Principles of Vegetable Culture)	1½

Second Year

First Semester		Second Semester	
(Fifteen Weeks Resident Instruction) Crs.		(Fifteen Weeks Resident Instruction) Crs.	
Agricultural Engineering S-3 (Farm Shop)	3	Agricultural Economics S-13 (Business Management)	3
English S-1 (Business English)	3	Floriculture S-6 (Commercial Production)	3
Floriculture S-5 (Commercial Production)	3	Floriculture S-8 (The Uses of Herbaceous Plants)	4
Floriculture S-7 (Flower Arrangement)	3	Floriculture S-10 (Conservatory Plants)	2
Floriculture S-9 (Plant Propagation)	3	Landscape Operations S-12 (Shrub Identification)	3
Fruit Growing S-7 (Small Fruits)	3	Vegetable Crops S-4 (Vegetable Forcing)	3

Floriculture S-1. (Garden Materials) I.

A study of the annuals, biennials, bulbs, and bedding plants which are commonly used in commercial floriculture and garden center work. Culture,

uses, and marketing methods are considered. Laboratory exercises include work in propagation, planning of beds and borders, planting, plant nomenclature and identification.

3 class hours and 1 2-hour laboratory period a week.

Credit, 4.
MR. GODDARD.

Floriculture S-2. (Greenhouse Construction) II.

A study of the types of greenhouses, types of construction, glass, plastics, painting, glazing, ventilators, beds, and benches. Also covers how to mechanize, modernize, and repair older greenhouses. Trips may be taken to visit greenhouse ranges in the vicinity of Amherst with University transportation.

2 class hours and 1 2-hour laboratory period a week.

Credit, 1½.
MR. ROSS.

Floriculture S-3. (Greenhouse Management) I.

A study of the principles of greenhouse management including the consideration of location, soils, fertilizers, watering, ventilation, temperature regulation, insect and disease control. Methods of wrapping and packaging of plants.

3 class hours and 1 2-hour laboratory period a week.

Credit, 4.
MR. ROSS.

Floriculture S-4. (Professional Literature and Reports) II.

Library reading and study on assigned subjects in the field of Floriculture. Oral and written reports.

1 2-hour period a week.

Credit, ½.
MR. JESTER.

Floriculture S-5. (Commercial Production) I.

Courses S-5 and S-6 are devoted to a consideration of the important commercial crops. Detailed attention is given to the culture (under glass) of carnations, chrysanthemums, snapdragons, bulb crops and other cutflower crops and seasonal pot plants. Modern methods of production and crop management are discussed in detail.

All members of the class may be required to take a one day trip to visit large commercial greenhouse ranges at an approximate cost of \$10.00.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.
MR. JESTER.

Floriculture S-6. (Commercial Production) II.

A continuation of Floriculture S-5.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.
MR. JESTER.

Floriculture S-7. (Flower Arrangement) I.

The lectures include a discussion of the principles and techniques underlying the use of flowers in corsages, wedding bouquets, vase, bowl, and basket arrangements, table decorations, funeral designs and sprays, and decorations for public functions. The study of color and color harmonies is also con-

sidered in this course. The laboratory periods provide opportunity for actual practice in making the various types of arrangements which are considered in the classroom.

Students enrolled in this course are required to take a one-day trip to attend the United Florists' Trade Fair and School in Boston.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.

MR. ROSS.

Floriculture S-8. (The Uses of Herbaceous Plants) II.

This course is a continuation of Floriculture S-1 and is intended for students majoring in floriculture, landscape operations and turf management. It provides opportunity for a more detailed study of many of the plants considered in the preceding course with special emphasis on their uses in gardens and in other types of landscape planting. Lectures, assigned readings, study and identification of plants, planning of borders and gardens.

Students enrolled in this course take a one-half day trip to attend the Western Massachusetts Flower Show in Springfield.

2 class hours and 1 4-hour laboratory period a week.

Credit, 4.

MR. BOICOURT.

Floriculture S-9. (Plant Propagation) I.

This course will present the principles of plant propagation with special reference to their application to plant materials in nursery and greenhouse practice. The lectures are concerned with careful explanation of seedage, cuttage, graftage, layerage and division. In the laboratory the student propagates plants by each of these methods.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

MR. BOICOURT AND STAFF.

Floriculture S-10. (Conservatory Plants) II.

A study of the plants, both foliage and flowering, used in conservatories and in decorative work or sold in the retail flower shop. Methods of propagation, culture, uses and identification of plants are included in the course. Trips may be taken to visit the conservatories at Smith and Mount Holyoke Colleges with university transportation.

1 class hour and 1 2-hour laboratory period a week.

Credit, 2.

MR. GODDARD.

Floriculture S-12. (Plant Propagation) II.

This course will present the principles of plant propagation with special reference to their application to plant materials in nursery and greenhouse practice. The lectures are concerned with careful explanation of seedage, cuttage, graftage, layerage and division. In the laboratory the student propagates plants by each of these methods. (For non-majors, only.)

2 class hours and 2 2-hour laboratory periods a week.

Credit, 2.

MR. BOICOURT AND STAFF.

FOOD DISTRIBUTION

HEAD OF DEPARTMENT: PROFESSOR JOHN BLACKMORE. PROFESSOR BROWN, PROFESSOR COLE, ASSOCIATE PROFESSOR FITZPATRICK, ASSOCIATE PROFESSOR RHOADES, ASSISTANT PROFESSOR CALLAHAN, ASSISTANT PROFESSOR LEE, ASSISTANT PROFESSOR SPINDLER

There is a growing demand for well-trained people to fill managerial positions in retail food firms and related businesses. The Food Distribution program is designed to provide the required training. It combines course work in business management with specialized and technical training in food sciences and economics. The instruction program includes the buying, handling, warehousing, packaging and merchandising of food products. Store operations and management are studied. Case studies from the retail food industry are used extensively as are field trips and visiting authorities from leading firms in the field.

Main emphasis in the program is on training for retail food store management which in turn can lead to executive positions such as district supervisor, buyers, merchandisers, and staff positions such as personnel manager, advertising manager, etc. In addition, basic training is given for positions in related businesses, including wholesaling, jobbing, commission and brokerage operations, food manufacturers representative, and for positions with government inspection and regulatory agencies.

Entrance Qualifications

Applicants should have good records in English, General Sciences and Elementary Mathematics.

Enrollment Limitation

Each entering class is limited to 20 persons selected on the basis of scholastic preparation, initiative and intelligence. Experience in the food industry is also valuable.

Food Distribution Club

This is a student organization which carries on a program of professional and social activities. It provides a means for acquainting students with prospective employers.

Transfer to the University

The Department also offers a four-year program in Food Distribution. Stockbridge students who maintain a B average or better may apply for transfer. Passing of suitable examinations and the offering of a background of high school courses required for University admission are also required.

Food Distribution

First Year

First Semester		Second Semester	
(Fifteen Weeks Resident Instruction) <i>Crs.</i>		(Fifteen Weeks Resident Instruction followed by Three Months Placement Training) <i>Crs.</i>	
Agricultural Economics S-1 (Practical Economics)	3	Agricultural Economics S-2 (World's Food Supply)	2
Agricultural Economics S-3 (Introductory Accounting)	3	Agricultural Economics S-8 (Accounting Principles)	3
Agricultural Economics S-19 (Consumer Behavior)	3	Agricultural Economics S-12 (Salesmanship)	2
Bacteriology S-1 (Bacteriology and Rural Hygiene)	3	Agricultural Engineering S-12 (Food Handling)	3
Mathematics S-1 (General Course)	2	Dairy Technology S-8 (Selection and Evaluation of Dairy Products)	3
Poultry Science S-9 (Poultry Products)	2	Speech S-2	1
Practical Science S-7 (Primarily Chemistry)	2	Vegetable Crops S-6 (Marketing Methods)	3
Speech S-1	1		

Second Year

First Semester		Second Semester	
(Fifteen Weeks Resident Instruction) <i>Crs.</i>		(Fifteen Weeks Resident Instruction) <i>Crs.</i>	
Agricultural Economics S-17 (Merchandising Methods)	3	Agricultural Economics S-10 (Business Law)	3
Agricultural Engineering S-13 (Refrigeration, Heating and Air Conditioning)	3	Agricultural Economics S-18 (Food Store Management)	3
English S-1 (Business English)	3	Agricultural Economics S-20 (Food Distribution Problems)	3
Food Management S-13 (Personnel Management)	3	Agricultural Economics S-24 (Transportation)	3
Vegetable Crops S-5 (Market Practices)	3	Animal Science S-8 (Meats and Meat Products)	3
		Food Technology S-2 (Fundamentals of Food Preservation)	3

Agricultural Economics S-1. (Practical Economics) I. and II.

A study of basic economic principles applied to the business firm, farm, household and the market. Includes discussion of supply, demand and price concepts, financial institutions and agricultural and food marketing problems. (Second semester course for food management majors is a 2 hour, 2 credit course).

3 class hours a week.

Credit, 3.
STAFF.

Agricultural Economics S-2. (World's Food Supply) II.

Economic geography of world's food supply with special emphasis on South East Asia, Soviet Union and North America.

2 class hours a week.

Credit, 2.
MR. JEFFREY.

Agricultural Economics S-3. (Introductory Accounting) I. and II.

The student is introduced to the accounting system of recording, classifying, summarizing and interpreting business transactions. The entire accounting cycle is taught including use of special journals, subsidiary ledgers, the preparation of the worksheet, income statement, and balance sheet.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.
MR. SPINDLER.

Agricultural Economics S-4. (Elements of Bookkeeping) II.

An eight week course for Dairy and Poultry Science freshmen designed to acquaint the student with fundamentals of the double-entry system of bookkeeping. Problem exercises covering each phase of the bookkeeping cycle are solved during the laboratory periods.

3 class hours and 2 2-hour laboratory periods a week.

Credit, 2½.

MR. CALLAHAN.

Agricultural Economics S-8. (Accounting Principles) II.

A continuation of Agricultural Economics S-3. In the second semester, consideration is given to methods of accounting for receivables, inventory, plant assets, notes, prepayments, accruals, accounting controls, payrolls, taxes and problems associated with partnerships and corporations.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.

MR. SPINDLER.

Agricultural Economics S-10. (Business Law) II.

This course will cover contracts, sales, property law, and the uniform commercial code. Some of the legal problems that arise in the day to day conduct of a business will be discussed. Case examples are used to illustrate principles involved. Different forms of business organizations will be discussed. This course is intended to provide the student with the information he would need as a basis for considering his position as a manager or employee of a small business firm and some of the legal problems involved in his position.

3 class hours a week.

Credit, 3.

MR. RHOADES.

Agricultural Economics S-12. (Salesmanship) II.

Basic approach and techniques of personal selling — buyer's viewpoint — salesman's viewpoint — human relations in selling — selling personality — selling consumer's goods and durables, services, intangibles, yourself — class practice — observation and analysis of retail selling — selling in everyday living.

2 class hours a week.

Credit, 2.

MR. COLE.

Agricultural Economics S-13. (Business Management) I. and II.

Primarily for Dairy Technology seniors during first semester and Floriculture seniors during second semester. Course content includes discussion of forms of business ownership, uses of capital and credit, retail selling and purchasing problems, business and personal insurance, and labor problems. Floriculture majors are also introduced to elementary bookkeeping principles during the latter part of the course.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

MR. CALLAHAN.

Agricultural Economics S-15. (Farm Management) I.

Primarily for seniors in Animal Science. Economic principles are applied

to the organization and operation of a farm business. Course content includes farm appraisal, use of credit, farm accounts, budgeting, farm business analysis, and adjustments to changes in economic conditions. Emphasis in laboratory periods is on practical problems in the management of dairy and live-stock farms.

3 class hours and 1 2-hour laboratory period a week.

Credit, 4.
MR. LEE.

Agricultural Economics S-16. (Farm Management) II.

Primarily for seniors in Poultry Science, Fruit Growing, and Vegetable Crops. This course is concerned with the application of economic principles to the organization and operation of a farm business. Course content includes farm credit, farm accounts, budgeting, and farm business analysis. Emphasis in laboratory periods is on practical problems in the management of poultry, fruit and vegetable farms.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.
MR. LEE.

Agricultural Economics S-17. (Merchandising Methods) I.

The principles, practices and problems of selling food and related products in retail food stores. An analysis of the factors affecting consumer purchasing in food stores is made. Store layout and design, display fixtures, product location, space allocation, inventory turnover and margins, pricing, promotion, methods of display, advertising allowances, coupons and other selling devices are covered.

3 class hours a week.

Credit, 3.
STAFF.

Agricultural Economics S-18. (Food Store Management) II.

Preparation for managing a retail food store through the use of capital, facilities, personnel and product. The selection of food store locations, budgeting, establishing goals and policies, organizing and supervising personnel in the major departments, operation efficiency, employee motivation and training, customer relations and the use of operating data to control profit are thoroughly discussed. A three day field trip will be required.

3 class hours a week.

Credit, 3.
STAFF.

Agricultural Economics S-19. (Consumer Behavior) I.

This course considers the consumer's interest as a functional part of the food industry. The motivations and influences that dominate the consumer decision and their relationship to the marketing and economic process will be emphasized. Methods for evaluating consumer acceptance will be examined.

3 class hours a week.

Credit, 3.
STAFF.

Agricultural Economics S-20. (Food Distribution Problems) II.

Discussions by guest lecturers from the food industry on management problems. A paper will be assigned on an important current problem in the

retail or wholesale segment of the food industry.

3 class hours a week.

Credit, 3.
STAFF.

Agricultural Economics S-22. (Dairy Marketing) II.

This course presents the economics of the movement of milk from farm into consumers' homes. It includes consideration of characteristics of production, importance of location of farms and dealer plants, bulkiness and perishability, Class I, Class II, blend and consumer prices, effects of state and federal regulations, and economics of retail and wholesale distribution.

3 class hours a week.

Credit, 3.
MR. SPINDLER.

Agricultural Economics S-24. (Transportation) II.

The relationship of transportation to the development and organization of the food industry will be emphasized. The responsibilities of and alternatives available to management in arranging for transportation will be considered. Attention will also be given to the general economics of transportation, regulation and regulatory policy.

3 class hours a week.

Credit, 3.
MR. BROWN.

FOOD MANAGEMENT

HEAD OF DEPARTMENT: PROFESSOR WILLIAM B. ESSELEN. ASSISTANT PROFESSOR COURNOYER, ASSISTANT PROFESSOR WRISLEY

In 1938, at the request of the Massachusetts Hotel Association, New England Club Managers, Boston Stewards Club, and the Massachusetts Restaurant Association, a two-year program of instruction in Food Management and Hotel Management was established.

The need for courses in restaurant and hotel administration arises from (1) the vocational opportunities flowing out of an industry so important in the economic life of Massachusetts and the country as a whole, and (2) the encouragement of this training on a professional level by the able and forward-looking leaders of the hotel and restaurant profession.

The program is designed to meet the needs of young men and women preparing for management positions in the many types of food service operation. Graduates fill positions in industrial and commercial restaurants, hotels, catering businesses, private and public clubs and in many other types of food service operations.

Application of principles learned in the classroom is encouraged throughout the program. Actual case problems and field trips (costing approximately \$25.00 per year) are a part of the curriculum. Men prominent in the field are invited to speak on subjects of special interest and discuss current operating problems. Practice work gives further opportunity to prepare for supervisory positions following graduation. Additional experience is required through summer employment in hotels and restaurants.

Students are selected on the basis of personality, personal appearance,

scholastic record, willingness to work and expressed interest in the field. Students who select Food Management as a major should have completed a full high school course and must present their school record at interview.

Various scholarships sponsored by the hotel and restaurant industry are available to deserving students. For further details see section on Scholarships in front of catalogue.

Food Management

First Year

First Semester		Second Semester	
(Fifteen Weeks Resident Instruction) <i>Crs.</i>		(Fifteen Weeks Resident Instruction followed by Three Months Placement Training) <i>Crs.</i>	
Agricultural Economics S-3 (Introductory Accounting)	3	Agricultural Economics S-8 (Accounting Principles)	3
Food Management S-3 (Food Service Management)	3	Agricultural Engineering S-12 (Food Handling Equipment)	3
Food Management S-5 (Guest Lectures)	1	Food Management S-2 (Commercial Cookery)	3
Home Economics S-1 (Basic Food Principles)	3	Food Management S-10 (Seminar)	2
Mathematics S-1 (General Course)	2	Food Technology S-2 (Fundamentals of Food Preservation)	3
Poultry Science S-9 (Poultry Products)	2	Home Economics S-2 (Elementary Nutrition) ½ Semester	1½
Practical Science S-7 (Primarily Chemistry)	2	Practical Science S-8 (Primarily Physics)	2
Speech S-1	1	Speech S-2	1

Second Year

First Semester		Second Semester	
(Fifteen Weeks Resident Instruction) <i>Crs.</i>		(Fifteen Weeks Resident Instruction) <i>Crs.</i>	
Agricultural Engineering S-13 (Refrigeration, Heating, and Air Conditioning)	3	Agricultural Economics S-1 (Practical Economics)	2
Bacteriology S-3 (Food Sanitation)	3	Agricultural Engineering S-18 (Food Service Space and Equipment Organization)	3
Food Management S-7 (Merchandising)	2	Animal Science S-8 (Meats and Meat Products)	3
Food Management S-9 (Hotel Practices)	3	Dairy Technology S-8 (Selection and Evaluation of Dairy Products)	3
Food Management S-11 (Hotel and Restaurant Accounting and Practices)	3	English S-1 (Business English)	3
Food Management S-13 (Personnel Management)	3	Food Management S-8 (Laws of Inn-keeping)	3
Food Management S-15 (Guest Lectures)	1		

Food Management S-2. (Commercial Cookery) II.

Experience in production of foods in large quantity, use of steam and power equipment, menu making for institutions; computation of costs, menu pricing.

1 class hour and 1 4-hour laboratory period a week.

Credit, 3.

MR. COURNOYER.

Food Management S-3. (Food Service Management) I.

The management of the steward's department of a hotel or institution, comprising the purchasing, storage, and issuing of foods, beverages, and supplies with the proper records and controls to keep in connection therewith.

3 class hours a week.

Credit, 3.

MR. WRISLEY.

Food Management S-5 and S-15. (Guest Lectures) I.

Delivered by representatives and leaders in the field of Hotel, Food Management and allied fields.

1 class hour a week.

Credit, 1.

THE DEPARTMENT.

Food Management S-7. (Merchandising) I.

Methods used by commercial and industrial concerns in selling the ultimate consumer. Organization and function of the hotel sales department, stressing importance of year-round booking of future business. Media used most profitably by hotels, resorts, and restaurants. Methods used to obtain public recognition and good will of guests.

2 class hours a week.

Credit, 2.

MR. COURNOYER.

Food Management S-8. (Laws of Innkeeping) II.

A consideration of the legal problems of the innkeeper and allied institutions including taxation.

3 class hours a week.

Credit, 3.

MR. COURNOYER.

Food Management S-9. (Hotel Practice) I.

Elements of hotel management.

3 class hours a week.

Credit, 3.

MR. WRISLEY.

Food Management S-10. (Seminar) II.

Survey of current food service literature and reports. Outside speakers on selected professional topics.

2 class hours a week.

Credit, 2.

MR. WRISLEY.

Food Management S-11. (Hotel and Restaurant Accounting and Practices) I.

An introduction to the hotel front office including practice with special journals used in hotels. Various systems and methods of food and beverage cost accounting are reviewed with special emphasis on their use as aids in management decisions.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

MR. WRISLEY.

Food Management S-13. (Personnel Management) I.

This course is designed to stimulate group employee relations. Covered during the course: analyzing, simplifying, and evaluating the job; recruiting, selecting and placing employees; training and rating employees; defining and measuring morale; fire and accident prevention; organizing personnel relations; increasing cooperation.

3 class hours a week.

Credit, 3.

MR. COURNOYER.

VOCATIONAL FORESTRY AND WOOD PRODUCTS

HEAD OF DEPARTMENT: PROFESSOR ARNOLD D. RHODES. PROFESSOR GATSLICK, ASSOCIATE PROFESSOR MACCONNELL, ASSOCIATE PROFESSOR GREELEY, ASSISTANT PROFESSOR ABBOTT, MR. BOND, MR. MAWSON

The Department offers two programs of study at the vocational level requiring two years for completion — one in the area of vocational forestry, the other in wood products. The student should elect his option upon admission.

Option 1 — Vocational Forestry

Vocational forestry encompasses the sub-professional aspects of managing forests and the land which supports the forest for the production of wood crops and water, the conservation of soil, and the use of the forest for hunting, fishing, and other forms of recreation. In many cases the production of wood is the primary objective of management, but in others, especially on public lands, management for water and recreation may be of equal or greater importance.

Men who successfully complete the program in vocational forestry are qualified as forest technicians for employment in sub-professional positions with state and federal agencies engaged in forestry activities; for work with timber growing industries, forest consultants and land surveyors; and for supervision of small forest units such as forested estates, watershed properties, state and town forests. Forest technicians perform such assignments as cruising timber, surveying property lines, mapping forest vegetation, scaling logs, marking trees for timber sales, harvesting forest crops, timber stand improvement, protection of forests against destructive agents such as fire, and the preparation of forest management plans and cutting budgets; and at times it includes such related work as the supervision of camp and picnic grounds, and the more rudimentary aspects of wildlife management. In time the forest technician should be competent to operate his own forest enterprise but not without first acquiring experience.

Although the forest technician is fitted to perform a variety of useful assignments essential to forest land management, it should be understood that he is not a full fledged professional forester and therefore cannot expect to fill certain forestry positions. It should be noted also that the occupation for which the student is preparing involves hard work, much of it physical in character, and may entail field activity in unpleasant weather and remote locations.

Option 2 — Wood Products

The manufacture and distribution of the materials processed from forest-grown trees comprise the field of wood products. More specifically it includes work with such items as lumber, plywood, ties, poles, post, pulpwood, and fuelwood but especially lumber and the many items fabricated from it. Graduates are prepared for employment in sawmills and associated forest harvesting operations, in wholesale and retail lumber yards and sales, wood processing and fabricating industries.

Whereas the forest technician is concerned mainly with growing forests

and with other activities associated with the management of forest and land, the wood products graduate works with the wood after the trees are grown and ready for conversion into useful products. The field of products is a broad one with many aspects including such activities as primary manufacture of lumber from logs, re-manufacture, air seasoning and kiln drying operations, fabrication into other products, merchandising of lumber at the wholesale and retail levels, and the preservative treatment of posts, poles and other items.

Because of its dense population, the Northeast is a major wood-consuming area and the seat of many wood-distributing and wood-using concerns. It is for vocational employment in such enterprises that the wood products major is prepared. The more competent and industrious men should qualify in time for supervisory positions, and with experience some may establish their own business.

The wood products curriculum provides moderate training also in applied forest management, such knowledge being especially useful for employment in wood-using industries that also own and manage forest land.

Entrance Requirements

A personal interview with each applicant is required. Preparation in mathematics through elementary algebra and plane geometry is necessary.

Enrollment Limitation

Each entering class is limited to 20 men in the vocational forestry option and 10 men in the wood products option, selected on the basis of scholastic preparation, sound purpose, and adequate physical ability.

Facilities

The University owns 2000 acres of forest, and has access to several thousand additional acres, all easily accessible from the campus. These forests are used for laboratory and field studies in forestry and certain aspects of wood utilization. Training at the University is augmented by field trips to local wood-growing and wood-using enterprises.

Placement Training

The program of study requires that the student spend the summer between his freshman and senior years in suitable placement training. Placement may necessitate working at considerable distances from home, especially in the vocational forestry option, and the student should be prepared for this possibility.

Additional Expenses

In addition to the regular expenses of the school program, the student is required to purchase a compass (about \$12), an axe, and an accident insurance policy (about \$18) available through the University at the time of registration. Expenses for required field trips should not exceed \$20 per year.

Forestry Club

This is a student organization for which all students of forestry and wood products, both Stockbridge and University, are eligible. Programs for the most part are professional in nature and present valuable information not otherwise available to students.

Transfer to the University

The Department offers four-year curricula in forestry and in wildlife management. Stockbridge students who maintain a B average or better may transfer to these University programs by passing an examination prepared for this purpose, provided also that the student has the background of high school subjects required for University admission.

Vocational Forestry

First Year

First Semester		Second Semester	
(Fifteen Weeks Resident Instruction) <i>Crs.</i>		(Fifteen Weeks Resident Instruction followed by Three Months Placement Training) <i>Crs.</i>	
Agronomy S-1 (Soil Management)	3	English S-1 (Business English)	3
Forestry S-1 (Introduction to Forestry)	1	Forestry S-2 (Wood Identification)	3
Forestry S-5 (Forest Measurement)	5	Forestry S-4 (Fire Protection)	3
Forestry S-7 (Forest Botany)	3	Forestry S-6 (Forest Measurement)	5
Forestry S-9 (Dendrology)	3	Forestry S-10 (Lumber and a Survey of Other Forest Products)	5
Mathematics S-3 (Review Mathematics)	3		

Second Year

First Semester		Second Semester	
(Fifteen Weeks Resident Instruction) <i>Crs.</i>		(Fifteen Weeks Resident Instruction) <i>Crs.</i>	
Forestry S-11 (Land Surveying)	4	Entomology S-10 (Forest Insects)	3
Forestry S-13 (Harvesting)	5	Forestry S-12 (Land Surveying)	4
Forestry S-15 (Aerial Photographs in Forestry)	4	Forestry S-16 (Artificial Propagation of Forests)	4
Forestry S-17 (Wildlife Management)	2	Forestry S-18 (Forest Diseases)	3
Forestry S-19 (Applied Silviculture)	4	Forestry S-20 (Forest Management)	5

Wood Products

First Year

First Semester		Second Semester	
(Fifteen Weeks Resident Instruction) <i>Crs.</i>		(Fifteen Weeks Resident Instruction followed by Three Months Placement Training) <i>Crs.</i>	
Agricultural Economics S-1 (Practical Economics)	3	Agricultural Economics S-3 (Introductory Accounting)	3
Agronomy S-1 (Soil Management)	3	Agricultural Engineering S-1 (Farm Power)	3
Forestry S-1 (Introduction to Forestry)	1	English S-1 (Business English)	3
Forestry S-5 (Forest Measurement)	5	Forestry S-2 (Wood Identification)	3
Forestry S-7 (Forest Botany)	3	Forestry S-10 (Lumber and a Survey of Other Forest Products)	5
Forestry S-9 (Dendrology)	3	Speech S-2	1
Mathematics S-3 (Review Mathematics)	3		

Second Year

First Semester		Second Semester	
(Fifteen Weeks Resident Instruction) <i>Crs.</i>		(Fifteen Weeks Resident Instruction) <i>Crs.</i>	
English S-3 (Report Writing)	3	Agricultural Economics S-10 (Business Law)	3
Forestry S-11 (Land Surveying)	4	Agricultural Economics S-12 (Salesmanship)	2
Forestry S-13 (Harvesting)	5	Agricultural Economics S-13 (Business Management)	3
Forestry S-21 (Forest Products Other than Lumber)	3	Agricultural Engineering S-3 (Farm Shop)	3
Forestry S-23 (Wood Seasoning and Preservation)	3	Agricultural Engineering S-9 (Farm Structures and Drainage)	4
		Forestry S-14 (Secondary Wood Processing)	3

Forestry S-1. (Introduction to Forestry) I.

An introduction to the fields of applied forestry and wood products.

1 class hour a week.

Credit, 1.

MR. BOND AND STAFF.

Forestry S-2. (Wood Identification) II.

The identification of commercial American woods based on macro- and microscopic features; an introduction to the relation of structural variation to the use-potential of wood.

3 2-hour periods a week.

Credit, 3.

MR. GATSLICK.

Forestry S-3. (Management of Small Woodlands) I.

The principles of producing timber as a crop from small forested areas: cultural measures to establish forest stands, increase yield, control forest composition, and improve timber quality; measurement of tree and stand volumes; log scaling. Designed for students not majoring in vocational forestry or wood products.

2 class hours and 1 4-hour laboratory period a week.

Credit, 4.

MR. MACCONNELL.

Forestry S-4. (Fire Protection) II.

A three-phase study of forest fire protection: (1) the effects of fire, principles of combustion, fire behavior, fire weather and fuels, (2) prevention and control of wildfire, and (3) the uses of controlled fire in forest land management.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

MR. ABBOTT.

Forestry S-5 and S-6. (Forest Measurement) I. and II.

Measurement of standing timber on small and large tracts of land; scaling practices and measurement of primary products cut from trees; an introduction to other types of forest measurements. A two-semester course.

2 class hours and 1 6-hour laboratory period a week.

Credit, 5.

MR. MAWSON.

Forestry S-7. (Forest Botany) I.

The structure, physiological, and reproductive functions of forest trees.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

MR. ABBOTT.

Forestry S-9. (Dendrology) I.

The identifying features of the principal North American trees; their botanical classification, geographical distribution, and importance in American forestry; the vegetation regions of the United States and Canada.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.

MR. ABBOTT.

Forestry S-10. (Lumber and a Survey of Other Forest Products) II.

The manufacture, seasoning, and grading of lumber; an introductory survey

of other major wood products; laboratory field trips to local wood-using industries.

3 class hours and 1 4-hour laboratory period a week.

Credit, 5.
MR. BOND.

Forestry S-11 and S-12. (Land Surveying) I. and II.

Plane and topographic surveying with emphasis on the use of tape, transit, and level; searching out property ownerships in the registry of deeds. A two-semester course.

2 class hours and 1 4-hour laboratory period a week.

Credit, 4.
MR. MAWSON.

Forestry S-13. (Harvesting) I.

The techniques of harvesting timber products in forests of the United States, including supervision, safety factors, and practical field work in the use of woods tools and machines.

2 class hours and 1 6-hour laboratory period a week.

Credit, 5.
MR. BOND.

Forestry S-14. (Secondary Wood Processing) II.

Methods of machining, gluing and finishing wood in the secondary wood-manufacturing industries.

2 class hours and 1 3-hour laboratory period a week.

Credit, 3.
MR. GATSLICK.

Forestry S-15. (Aerial Photographs in Forestry) I.

The use of aerial photographs in forest mapping and timber estimating; interpretation of photographs; the use of stereoscope, sketchmaster, and other standard equipment. A map covering several thousand acres is prepared.

2 class hours and 1 4-hour laboratory period a week.

Credit, 4.
MR. MACCONNELL.

Forestry S-16. (Artificial Propagation of Forests) II.

Forest tree seed; propagation of forests by direct seeding and planting; nursery management; methods to improve the inherent characteristics of forest growing stock.

2 class hours and 1 4-hour laboratory period a week.

Credit, 4.
MR. ABBOTT.

Forestry S-17. (Wildlife Management) I.

Effects of animals on the forest; the effects of forest practices on wild animal habitats and production.

2 class hours a week.

Credit, 2.
MR. GREELEY.

Forestry S-18. (Forest Diseases) II.

The principal diseases of forest trees and the causal agents; life histories and identification of representative fungi; methods of control.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.
MR. ABBOTT.

Forestry S-19. (Applied Silviculture) I.

The growing of wood as a forest crop: cleaning, thinning, improvement cutting, pruning and other treatments applied to young and middle-aged forest stands; harvest and regeneration cuttings in mature stands; methods of logging slash disposal.

2 class hours and 1 4-hour laboratory period a week.

Credit, 4.

MR. RHODES.

Forestry S-20. (Forest Management) II.

The organization of the forest for sustained yield management, forest regulation, forest management plans. A management plan is prepared for a forest property of several thousand acres.

3 class hours and 1 4-hour laboratory period a week.

Credit, 5.

MR. MACCONNELL.

Forestry S-21. (Forest Products Other Than Lumber) I.

The primary and secondary products of the American Forest exclusive of lumber, their manufacture, economic importance and potential.

3 class hours a week.

Credit, 3.

MR. GATSLICK.

Forestry S-23. (Wood Seasoning and Preservation) I.

The seasoning and preservative treatment of wood: materials, equipment, and applied techniques.

2 class hours and 1 3-hour laboratory period a week.

Credit, 3.

MR. GATSLICK.

FRUIT GROWING

ACTING HEAD OF DEPARTMENT: PROFESSOR GRANT B. SNYDER. PROFESSOR SOUTHWICK, ASSOCIATE PROFESSOR WEEKS, MR. ANDERSON

A major program of study in the Department of Horticulture.

The course in fruit growing prepares the student for successful participation in the activities of our many-sided fruit industry. An essentially practical course, it emphasizes also the basic principles of plant growth which underlie sound cultural practices and the economic principles which bear upon marketing procedures and the business side of fruit growing.

The University has about 50 acres of fruits easily reached from the classroom. Most of the trees and small fruits commonly found in New England are grown here on a commercial scale. Excellent commercial orchards near the campus provide a wealth of additional material for observation and study. Large markets are visited to afford valuable contacts with the main channels of crop distribution.

Equipment for instruction includes a modern storage and packing house. The principal types of orchard tools and machines, such as tractors, plows, harrows, cultivators, sprayers, dusters, and pruning and grafting tools are available for study and trial by students.

Graduates of the course in fruit growing are found in positions of responsi-

bility all over the Northeast. Fruit growing is an active and thriving industry which offers a field of continuing interest and many opportunities for profitable development to the earnest student.

Job Opportunities

Skilled workers on fruit farms, operators, foremen, owners; packing house operators, managers of sales and distribution. Salesmen for commercial spray materials, orchard equipment, and fertilizers; fruit inspection and grading. Growers of specialty fruit crops.

Field trips will be required during the two years at an estimated cost of \$25 per student.

O. G. Anderson Fund

Through the courtesy of Mrs. Anderson a memorial fund has been established in the name of the late Professor Oscar G. Anderson, the income of which is available for the purchase of textbooks for "some worthy student of good character and in need of assistance," who is majoring in Fruit Growing.

Application for such assistance may be made to the senior Professor of Fruit Growing or to the Director of the Stockbridge School.

Fruit Growing

First Year

First Semester		Second Semester	
(Fifteen Weeks Resident Instruction)	Crs.	(Eight Weeks Resident Instruction	Crs.
Agricultural Economics S-1 (Practical Economics)	3	followed by Five Months Placement Training)	
Agricultural Engineering S-1 (Farm Power)	3	Agricultural Engineering S-14 (Repair of Farm Equipment)	1½
Agronomy S-1 (Soil Management)	3	Agronomy S-2 (Fertilizers)	1½
Forestry S-3 (Management of Small Woodlands)	4	Entomology S-4 (Insect and Related Pests of Fruit, Shade and Ornamental Trees and Shrubs)	1½
Fruit Growing S-1 (Growing Tree Fruits)	3	Fruit Growing S-2 (Orchard Pruning)	1½
Speech S-1	1	Plant Pathology S-2 (Plant Diseases)	1½
Vegetable Crops S-1 (Principles of Plant Culture)	3	Speech S-2	1½
		Vegetable Crops S-2 (Principles of Vegetable Culture)	1½

Second Year

First Semester		Second Semester	
(Fifteen Weeks Resident Instruction)	Crs.	(Fifteen Weeks Resident Instruction)	Crs.
Agricultural Economics S-3 (Introductory Accounting)	3	Agricultural Economics S-10 (Business Law)	3
Agricultural Engineering S-13 (Refrigeration, Heating, and Air Conditioning)	3	Agricultural Economics S-12 (Salesmanship)	2
English S-1 (Business English)	3	Agricultural Economics S-16 (Farm Management)	3
Entomology S-5 (Control of Insect and Related Pests)	3	Agricultural Engineering S-9 (Farm Structures and Drainage)	4
Fruit Growing S-7 (Small Fruits)	3	Agronomy S-4 (Field Crops)	3
Vegetable Crops S-5 (Market Practices)	3	Fruit Growing S-4 (Fruit Pest Control)	3
Vegetable Crops S-7 (Commercial vegetable Culture)	3	Fruit Growing S-6 (Commercial Orcharding)	4

Fruit Growing S-1. (Growing Tree Fruits) I.

Covers the planting and development of orchards and the management of bearing trees. The nature of the tree itself is stressed as the basis of sound

cultural practices. The selection of sites and soils and varieties is studied for plantations of apples, pears, peaches, plums, and cherries. The handling of young trees to bring them into early profitable bearing is given special attention.

The culture of bearing orchards is studied in detail to give an understanding of the factors that influence yield and quality of fruit. Methods of soil management are considered with preference to their long-time effects on tree and soil. The experimental plots afford exceptional opportunities to study cultural methods and many subjects are discussed in the orchards.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

MR. ANDERSON.

Fruit Growing S-2. (Orchard Pruning) II.

Aims to give the students a thorough training in the underlying principles and the practice of pruning apples, pears, peaches, cherries and plums. The bearing habit of each fruit is studied as a basis for effective pruning. Practice pruning in the University orchards is stressed as an important feature of the course. Instruction and practice in budding and grafting are included in this course. Bridge grafting and top working are given special attention.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 1½.

MR. ANDERSON.

Fruit Growing S-4. (Fruit Pest Control) II.

Deals with pests, other than insects, which attack fruit plants. A study of pest control methods and materials is an essential part of the course.

The construction and care of pest control equipment is emphasized and students are given the opportunity to see and use many different types of equipment.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

MR. ANDERSON.

Fruit Growing S-6. (Commercial Orchardling) II.

A thorough discussion of recent technical developments as they apply to commercial orcharding in the Northeast. Topics covered in the course include preharvest drop and its control, storage and storage disorders, propagation and rootstocks, influence of weather factors on fruit production, mineral nutrition, factors affecting fruit set, and chemical thinning.

Each student should be prepared to take one or more field trips.

3 class hours and 1 2-hour laboratory period a week.

Credit, 4.

MR. WEEKS AND MR. SOUTHWICK.

Fruit Growing S-7. (Small Fruits) I.

There are many unusual opportunities in Massachusetts for success in growing small fruits. This course deals with the establishment and management of plantations of strawberries, raspberries, blackberries, blueberries, currants, cranberries, and grapes. The aim is to make the course of the utmost practical value as well as to give an understanding of the fundamental principles on which practices are based.

The University has plantations of these fruits except cranberries which are

used freely for laboratory purposes. Berries which ripen in summer are frozen and held in excellent condition for study in this course.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

MR. ANDERSON.

Fruit Growing S-9. (General Course) I.

For students in other majors who can devote one semester only to the subject of fruit growing. It deals with the practical side of growing tree and small fruits for home use and market. Special attention is given to such questions as selection of sites, choice of varieties, grafting, pruning, spraying, soil management, harvesting, and storing.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

MR. ANDERSON.

LANDSCAPE OPERATIONS

HEAD OF DEPARTMENT: PROFESSOR RAYMOND H. OTTO. ASSOCIATE

PROFESSOR PROCOPIO, ASSISTANT PROFESSOR HAMILTON, ASSISTANT

PROFESSOR CAVEN, PROFESSOR BLUNDELL, CAMPUS LANDSCAPE ARCHITECT

The constantly increasing interest in more intensive development of both public and private grounds has created a demand for men trained to handle the varied problems in landscape construction and maintenance. This curriculum is designed to acquaint the student with these phases of landscape operations and to give him the basic knowledge and the most recent developments in those areas of learning on which the solutions to these problems depend.

The courses within the department deal with the study of drafting-room practices and field techniques necessary for the landscape development of grounds, including the measuring and grading of land surfaces, construction of walks, drives, terraces and walls and the laying out of such landscape elements. Additional courses deal with identification of woody plants, their use in landscape development and the programming of their handling and maintenance on grounds and in nurseries.

Courses in other departments deal with plant growth, soils, fertilizers and plant pests; with the identification and maintenance of herbaceous plants and turf grasses; with fruit growing; with shade tree maintenance; and with plant propagation. Courses in business English, speech and elementary accounting round out the student's training.

In addition to the formal course work the student is expected to spend the five months between his first and second years as an employee of a person or firm in some phase of landscape operations. This placement period normally is from the first of April to the first of September. While on placement the student is required to compile certain reports which will call his attention to the relevant aspects of landscape operations.

Financial obligations over and above those listed under General Information include drafting equipment, amounting to approximately \$25.00, and field trips with a total estimated cost of \$30.00.

Job Opportunities

Alumni of this department hold positions as plant propagators, foremen or superintendents for nurseries; gardeners, foremen or superintendents on private estates, public parks, cemeteries, botanical gardens and various other public and private institution grounds; foremen with landscape contractors and real estate developers; owners of their own landscape firms, nurseries and garden centers; salesmen for seed and nursery concerns.

Landscape Operations

First Year

First Semester		Second Semester	
(Fifteen Weeks Resident Instruction)	Crs.	(Eight Weeks Resident Instruction	Crs.
Agronomy S-1 (Soil Management)	3	followed by Five Months Placement	
Agrostology S-5 (Basic Factors, Construction and Maintenance of Fine Turf Areas)	3	Training)	
Arboriculture S-1 (Practices and Policies—Lectures only)	2	Agronomy S-2 (Fertilizers)	1½
English S-1 (Business English)	3	Agrostology S-6 (Application of Basic Factors to Practical Problems)	1½
Landscape Operations S-1 (Tree Identification)	3	Arboriculture S-2 (Practices and Policies—Lectures only)	1
Speech S-1	1	Entomology S-4 (Insect and Related Pests of Shade and Ornamental Trees and Shrubs)	1½
Vegetable Crops S-1 (Principles of Plant Culture)	3	Landscape Operations S-4 (Landscape Maintenance)	1
		Plant Pathology S-2 (Plant Diseases)	1½
		Speech S-2	½
		Vegetable Crops S-2 (Principles of plant culture)	1½

Second Year

First Semester		Second Semester	
(Fifteen Weeks Resident Instruction)	Crs.	(Fifteen Weeks Resident Instruction)	Crs.
Entomology S-5 (Control of Insect and Related Pests of Shade and Ornamental Trees and Shrubs)	3	Agricultural Economics S-13 (Business Management)	3
Floriculture S-1 (Garden Materials)	4	Floriculture S-8 (The Uses of Herbaceous Plants)	4
Floriculture S-9 (Plant Propagation)	3	Landscape Operations S-8 (Topography and Construction)	3
Fruit Growing S-9 (General Course)	3	Landscape Operations S-10 (Nursery Practices and Management)	3
Landscape Operations S-7 (Surveying and Mapping)	3	Landscape Operations S-12 (Shrub Identification)	3
Landscape Operations S-13 (Landscape Drafting)	3	Landscape Operations S-14 (Small Property Development)	3

Landscape Operations S-1. (Tree Identification) I.

Study of evergreen and deciduous trees used in landscape work, their distinguishing characters and culture, with special reference to nursery and planting practice.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.
MR. CAVEN.

Landscape Operations S-4. (Landscape Maintenance) II.

This course is in preparation for placement and takes up the programming for such horticultural practices as pruning, planting, winter protection, and pest control, as related to gardens and nurseries.

2 class hours a week.

Credit, 1.
MR. PROCOPIO.

Landscape Operations S-7. (Surveying and Mapping) I.

Practice in the use of simple surveying instruments as tapes, compasses, and levels used in the measurement of land surfaces, and the application of these instruments in landscape construction. Laboratory fee \$2.00.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.

MR. HAMILTON.

Landscape Operations S-8. (Topography and Construction) II.

Continuation of Landscape Operations S-7, including problems in landscape grading, establishing grades and setting stakes for landscape development from working drawings. Laboratory fee \$2.00

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.

MR. HAMILTON.

Landscape Operations S-10. (Nursery Practices and Management) II.

For landscape operations majors only. This course deals with the propagation, maintenance and planting of nursery plants. Laboratory work includes experience in advanced methods of propagation, lining out stock in cold frames and in the field, pruning, root pruning, and planting. Emphasis is placed on development of supervisory capacity. The student is given the opportunity to develop a nursery program. A one-day field trip to Education Day of the Annual Convention of the New England Nurserymen's Association will be required. Estimated cost: \$5.

2 class hours and 1 2-hour laboratory period a week, first half of semester.

1 class hour and 1 4-hour laboratory period a week, last half of semester.

Credit, 3.

MR. BLUNDELL.

Landscape Operations S-12. (Shrub Identification) II.

Study of shrubs and woody vines, both evergreen and deciduous, to enable the student to recognize the plants used in ornamental plantings and to familiarize him with the handling of these plants both in nursery practice and landscape work. A two-day field trip will be required. Estimated cost, \$20.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.

MR. CAVEN.

Landscape Operations S-13. (Landscape Drafting) I.

This course introduces the student to the techniques of graphic communication necessary in the various phases of landscape operations. Drafting experience is obtained by drawing details of structures commonly associated with the landscape development of small properties. Open to Landscape Operations majors only. Laboratory fee \$2.00

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.

MR. PROCOPIO.

Landscape Operations S-14. (Small Property Development) II.

This course investigates the current trends in landscape development of small properties. The student will have the opportunity to work out the landscape development for several properties. Special attention will be focused on planting

design. Open to Landscape Operations majors only. Laboratory fee \$2.00

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.

MR. PROCOPIO.

POULTRY SCIENCE

HEAD OF DEPARTMENT: PROFESSOR THOMAS W. FOX. PROFESSOR SMYTH,

PROFESSOR MELLEN, ASSOCIATE PROFESSOR ANDERSON, ASSISTANT

PROFESSOR GROVER, MR. SMITH

There are excellent opportunities in the poultry industry for men and women with proper training. Graduates from this department have taken their places as leaders in the industry and have filled them capably. Some of them own their own breeding farms, manage or assist in the management of commercial egg farms, while others are in those industries which are closely allied with the production and marketing of poultry products.

Six specialized courses and two general courses are offered by this department. Those students who specialize in poultry culture take all six of the specialized courses. The general course is designed to give the students specializing in other branches of agriculture and horticulture the fundamental principles underlying successful poultry raising when a sideline on the farm.

The facilities for practical instruction in poultry husbandry include quarters and equipment in Stockbridge Hall for efficient classroom teaching and demonstrations.

The University Poultry Farm, the practical laboratory, comprises classrooms and laboratories which provide facilities for practice in incubation, breeding, feeding, killing, picking, candling and grading eggs, caponizing, judging, sexing, construction of poultry houses and appliances, and other phases of poultry work.

The University flock of about 1,500 adult birds consists principally of White Plymouth Rocks, Single Comb Rhode Island Reds, Barred Plymouth Rocks, Single Comb White Leghorns and New Hampshires. The largest flocks of approximately 150 birds are used primarily for practical experiments and demonstrations in housing, feeding, breeding and management. Equipment includes several types of modern incubators; many styles of coal, gas, hot water, and electric brooders and chick batteries for brooding and rearing approximately 5,000 chicks. A flock of several hundred improved turkeys is maintained.

The practical phases of commercial poultry production are stressed in the courses offered.

Job Opportunities

Skilled workers on poultry farms, owner operators and managers; poultry breeding farms; operation of incubators and brooders; wholesale and retail poultry meats; testing, grading and packing eggs; poultry cooperative sales work with eggs, dressed and live fowl; salesmen for poultry feeds and equipment; broiler production and day-old chicks; turkey and duck farms, breeding (record of performance) and disease control (Pullorum) field men.

Poultry Science

First Year

First Semester		Second Semester	
(Fifteen Weeks Resident Instruction)	Crs.	(Fifteen Weeks Resident Instruction	Crs.
Agronomy S-1 (Soil Management)	3	followed by Three Months Placement Training)	
Animal Science S-9 (Special Dairy Cattle Course)	3	Agricultural Economics S-2 (World Food Supply)	2
Bacteriology S-1 (Bacteriology and Rural Hygiene)	3	Agricultural Economics S-3 (Introductory Accounting)	3
Dairy Technology S-1 (General Dairying)	3	Agricultural Engineering S-3 (Farm Shop)	3
Poultry Science S-1 (Introductory Poultry Management)	3	Agronomy S-2 (Fertilizers—1st half of semester)	1½
Practical Science S-7 (Primarily Chemistry)	2	Entomology S-12 (Livestock and Forage Crop Insects—2nd half of semester)	2
Speech S-1	1	Poultry Science S-12 (Specialties)	2
		Practical Science S-8 (Primarily Physics)	2
		Speech S-2	1

Second Year

First Semester		Second Semester	
(Fifteen Weeks Resident Instruction)	Crs.	(Fifteen Weeks Resident Instruction)	Crs.
Agricultural Economics S-1 (Practical Economics)	3	Agricultural Economics S-10 (Business Law)	3
Agricultural Engineering S-7 (Farm Structures)	3	Agricultural Economics S-16 (Farm Management)	3
English S-1 (Business English)	3	Agricultural Engineering S-1 (Farm Power)	3
Mathematics S-1 (General Course)	2	Agronomy S-4 (Field Crops)	3
Poultry Science S-5 (Marketing)	3	Poultry Science S-4 (Feeding)	3
Poultry Science S-7 (Breeding)	4	Poultry Science S-8 (Advanced Poultry Management)	3
Veterinary Science S-1 (Animal Sanitary Science)	3	Veterinary Science S-2 (Applied Animal Sanitary Science)	4

Poultry Science S-1. (Introductory Poultry Management) I.

This course provides the student an introduction to the poultry industry by enterprises, e.g. market eggs, hatching eggs, broilers and meat production. The basic management practices concerned with incubation, brooding, rearing, and housing poultry are stressed. The laboratory will include poultry judging and evaluation for both meat and egg production.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

MR. SMITH.

Poultry Science S-4. (Feeding) II.

This course covers a study of the scientific principles of nutrition essential to commercial success. Rations properly balanced for various purposes will be calculated. A comparative analysis of the different methods of feeding is included.

3 class hours a week.

Credit, 3.

MR. ANDERSON.

Poultry Science S-5. (Marketing) I.

A study of preparing eggs and poultry products to meet the requirements of the northeastern markets. Grades, prices and reports are studied in conjunction

with different marketing methods. The laboratories are designed to cover the field of practical grading, internal study, candling and packing of eggs as well as selection, fattening and killing and dressing of poultry by the latest approved methods.

A one-half day class trip to Springfield markets in December is required. Estimated cost, \$2.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.
MR. SMITH.

Poultry Science S-7. (Breeding) I.

This course includes the basic principles of heredity necessary to an understanding of the inheritance of various morphological characteristics of the domestic fowl. Also stressed is the breeding plans used in the selection programs for meat and egg production.

3 class hours and 1 2-hour laboratory period a week.

Credit, 4.
MR. MELLEN.

Poultry Science S-8. (Advanced Poultry Management) II.

Each student will be assigned references in the field in which he is most interested. Oral reports will be required. A major part of the work will be the writing of a term paper and students will be graded on their ability to summarize reference reading and on the neatness of their work. Required day trips totalling three or four days to representative commercial poultry areas are made at an approximate cost of \$30.00 per student. The basic factors essential to a financially successful poultry enterprise are analyzed.

3 class hours a week.

Credit, 3.
MR. GROVER.

Poultry Science S-9. (Poultry Products) I.

This course covers candling and grading of eggs, market classification, a study of eggs in the local markets, dressing poultry and various ways of preparing poultry for the table. Prices and market operations form an active part of the course.

A one-half day class trip to the Springfield markets in December is required. Estimated cost, \$2.

1 class hour and 1 2-hour laboratory period a week.

Credit, 2.
MR. SMITH.

Poultry Science S-10. (General Poultry Husbandry) II.

Poultry keeping as a national industry; its importance and geographical distribution; opportunities and possibilities in poultry culture in Massachusetts; principles of feeding; utility classification of fowl; incubation; the production of hatching eggs; the baby chick industry and brooding and rearing. Practical exercises will be closely correlated with the study of breeds and varieties, various types of incubators, brooders, brooder houses, etc.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.
MR. SMITH.

Poultry Science S-12. (Specialties) II.

Turkeys, ducks, geese, and game birds are considered. Breeding, incubation, feeding, rearing, management, marketing, housing and disease control methods and practices are studied. Most of the course is devoted to the study of turkeys. 1 class hour and 1 2-hour laboratory period a week.

Credit, 2.
MR. SMYTH.

TURF MANAGEMENT

HEAD OF DEPARTMENT: PROFESSOR WILLIAM G. COLBY. ASSISTANT

PROFESSOR TROLL, ASSISTANT PROFESSOR ZAK, MR. WADDINGTON

There is an immediate need for skilled supervisors and assistants to park, cemetery, and recreation area superintendents. Municipal and private golf clubs are expecting that their superintendents shall be trained in turf maintenance. Every city and large town offers splendid opportunities for the private business horticulturist who is especially well trained to "take care of the lawn."

As the many proposed memorial parks, play fields, public buildings and golf courses are being constructed and completed, the demand for specialists in turf maintenance will be increased and the number of replacements needed annually will be large.

This course is arranged and taught in such a manner that a student who has completed the work will be well qualified to accept a position as assistant or the actual superintendency of a small park, cemetery, or golf course, or to establish a business in his community.

Laboratory and field exercises give practical experience and demonstrations. Good equipment is supplemented by loans from manufacturers and supply houses. The supporting courses are strong and have been carefully chosen for their close alliance to the problems of turf maintenance and general estate work.

Each student's placement training and special interest will be considered in his chosen field, whether it be park, cemetery, golf course, or private business, and professional men will visit the classes to give of their experiences. Every student will be required to keep a record of work done, results obtained, and observations made during the placement training period, for use during the senior year.

Job Opportunities

Assistant to superintendents or as an actual superintendent on golf course, cemetery, park, or with a commercial nursery or landscape service company, also with golf course construction companies and equipment supply dealers.

At least one field trip will be required during the second semester of the senior year. The total cost of such a trip or trips to each student will not exceed \$20.

Turf Management

First Year

First Semester		Second Semester	
(Fifteen Weeks Resident Instruction)	Crs.	(Eight Weeks Resident Instruction	Crs.
Agronomy S-1 (Soil Management)	3	followed by Five Months Placement Training)	
Agrostology S-1 (Basic Factors and Uses of Turf Areas)	5	Agricultural Economics S-4 (Elements of Bookkeeping)	2½
English S-1 (Business English)	3	Agricultural Engineering S-14 (Repair of Farm Equipment)	1½
Floriculture S-1 (Garden Materials)	4	Agronomy S-2 (Fertilizers)	1½
Landscape Operations S-1 (Tree Identification)	3	Agrostology S-2 (Construction and Maintenance of Turf Areas)	2½
Speech S-1	1	Entomology S-6 (Turf Insects)	1
Vegetable Crops S-1 (Principles of Plant Culture)	3	Plant Pathology S-2 (Plant Diseases)	1½
		Speech S-2	½

Second Year

First Semester		Second Semester	
(Fifteen Weeks Resident Instruction)	Crs.	(Fifteen Weeks Resident Instruction)	Crs.
Agricultural Engineering S-9 (Farm Structures and Drainage)	4	Agricultural Economics S-10 (Business Law)	3
Agricultural Engineering S-11 (Grounds Equipment)	3	Agricultural Engineering S-16 (Irrigation and Soil Conservation)	3
Agrostology S-3 (Turf Maintenance as a Business)	5	Agrostology S-4 (Practical Problems)	5
Arboriculture S-1 (Practices and Policies—Lectures only)	2	Arboriculture S-2 (Practices and Policies—Lectures only)	2
English S-3 (Report Writing)	3	Floriculture S-8 (The Uses of Herbaceous Plants)	4
Landscape Operations S-7 (Surveying and Mapping)	3	Landscape Operations S-8 (Topography and Construction)	3

Agrostology S-1. (Basic Factors and Uses of Turf Areas) I.

Starting with an appreciation of the grass plant the course carries the fine, turf grasses from seed through uses. Identification of seed and vegetative growth. The limits of tolerance and factors affecting them are studied and correlated with the adaptation of the species to the user's specifications for various conditions.

3 class hours and 2 2-hour laboratory periods a week.

Credit, 5.

MR. WADDINGTON.

Agrostology S-2. (Construction and Maintenance of Turf Areas) II.

The student will adapt factors determined in the first semester to the practical construction of new turf areas and maintenance of existing turf. Fertilizing, controlling disease, clipping, watering, etc.

3 class hours and 2 2-hour laboratory periods a week.

Credit, 2½.

MR. TROLL.

Agrostology S-3. (Turf Maintenance as a Business) I.

This course is primarily for those students desiring to become professional turf growers such as superintendents of golf courses, cemeteries, or parks. The cultural costs as well as the monetary costs are studied. Equipment, fungicides, insecticides and herbicides are evaluated. Experiences gained during summer placement are thoroughly discussed.

3 class hours and 2 2-hour laboratory periods a week.

Credit, 5.

MR. TROLL.

Agrostology S-4. (Practical Problems) II.

Use of popular and technical journals as a guide to advanced and up-to-date information on turf culture is stressed. Field trips to research stations, sod farms and business organizations serving the turf field develop a broad understanding of turfgrass work. Practical problems on turf and equipment maintenance serve to summarize material of preceding courses for the turf major.

4 class hours and 1 3-hour laboratory period a week.

Credit, 5.

MR. TROLL.

Agrostology S-5. (Basic Factors, Construction and Maintenance of Fine Turf Areas) I.

At the completion of this course the student should have a knowledge and appreciation of the requirements for the growing of lawns and sports turf.

He will have considered the construction of turf areas; seed identification, selection and sowing; identification of turf grasses and their soil and fertilizer preferences, correct cultural practices and control of turf pests and diseases.

This course is for arboriculture and landscape operations majors.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.

MR. ZAK.

Agrostology S-6. (Application of Basic Factors to Practical Problems) II.

The interrelationships between grasses and their uses, and soil management problems is stressed. This gives the student a more thorough understanding of the nature of practical turfgrass work, the diagnosis and treatment of problem situations.

This course is for landscape operations majors only.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 1½.

MR. WADDINGTON.

VEGETABLE CROPS

ACTING HEAD OF DEPARTMENT: PROFESSOR GRANT B. SNYDER. ASSISTANT

PROFESSOR TUTTLE, MR. MAYNARD

A Major Program in the Department of Horticulture.

The production and marketing of vegetable crops is a highly specialized business involving a background of technical training as well as a knowledge of practical skills. The courses in this major are organized to provide the student with a basic knowledge of plants and practices employed in their culture, post-harvest handling and marketing.

The facilities for instruction include new and modern classrooms, laboratories and greenhouses located in and attached to Bowditch Hall. In addition, some ten acres of land are utilized for field research by members of the staff. Nearby production areas and markets are also utilized to provide students with first-hand knowledge of various commercial practices as a supplement to their class and laboratory exercises.

Job Opportunities

There is a demand for trained personnel in the general fields of production, industry, sales and marketing as these relate to vegetable crops. These include the operation of a market garden or greenhouse business; employees in responsible positions on private estates and state institutions; workers for seed growing firms, salesmen for various supplies, equipment and machinery companies; state, private and federal produce inspection; wholesale and retail sales with various market agencies. These are representative of a wide field of job opportunities.

Field trips will be required during the two years at an estimated cost of \$40.

Vegetable Crops

First Year

First Semester	
(Fifteen Weeks Resident Instruction)	Crs.
Agronomy S-1 (Soil Management)	3
English S-1 (Business English)	3
Floriculture S-1 (Garden Materials)	4
Fruit Growing S-1 (Growing Tree Fruits)	3
Speech S-1	1
Vegetable Crops S-1 (Principles of Plant Culture)	3
Vegetable Crops S-7 (Commercial Vegetable Culture)	3

Second Semester	
(Eight Weeks Resident Instruction followed by Five Months Placement Training)	Crs.
Agricultural Engineering S-14 (Repair of Farm Equipment)	1½
Agronomy S-2 (Fertilizers)	1½
Entomology S-2 (Insect and Related Pests of Florists' Crops)	2
Food Technology S-2 (Fundamentals of Food Preservation)	1½
Speech S-2	½
Vegetable Crops S-2 (Principles of Vegetable Culture)	1½
Vegetable Crops S-12 (Plant Pests and Their Control)	2

Second Year

First Semester	
(Fifteen Weeks Resident Instruction)	Crs.
Agricultural Economics S-1 (Practical Economics)	3
Agricultural Economics S-3 (Introductory Accounting)	3
Agricultural Engineering S-1 (Farm Power)	3
Fruit Growing S-7 (Small Fruits)	3
Mathematics S-1 (General Course)	2
Vegetable Crops S-3 (Systematic)	3
Vegetable Crops S-5 (Market Practices)	3

Second Semester	
(Fifteen Weeks Resident Instruction)	Crs.
Agricultural Economics S-10 (Business Law)	3
Agricultural Economics S-12 (Salesmanship)	2
Agricultural Economics S-16 (Farm Management)	3
Agricultural Engineering S-3 (Farm Shop)	3
Vegetable Crops S-4 (Vegetable Forcing)	3
Vegetable Crops S-6 (Marketing Methods)	3
Vegetable Crops S-8 (Commercial Vegetable Culture)	3

Vegetable Crops S-1. (Principles of Plant Culture) I.

An applied study of plants: their classification, structure and growth characteristics with emphasis on the technical language used in plant science so that the student may have a better understanding of the content of both scientific and popular literature as this relates to the cultural and handling practices for horticultural crops.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.
MR. TUTTLE.

Vegetable Crops S-2. (Principles of Vegetable Culture) II.

Lectures are devoted to the more important environmental factors of the soil and climate which regulate plant growth and reproduction, including water, temperature, light, humidity and wind.

3 class hours a week.

Credit, 1½.
MR. MAYNARD.

Vegetable Crops S-3. (Systematic) I.

This course is designed to acquaint the student with the identification, nomenclature and classification of the standard types and varieties of vegetables; judging and exhibiting; seed production and variety improvement work.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.
MR. TUTTLE, MR. MAYNARD.

Vegetable Crops S-4. (Vegetable Forcing) II.

A study of the principles and practices involved in growing, harvesting and marketing of vegetable crops commonly grown in forcing structures, especially tomatoes, cucumbers, lettuce, mushrooms and rhubarb. Discussions will also include the growing and handling of vegetable plants for field setting, in plant houses, hotbeds and cold frames.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.
MR. TUTTLE.

Vegetable Crops S-5. (Market Practices) I.

A study of the various factors and practices involved in the post-harvest handling of vegetables with emphasis on quality control through waxing, pre-cooling and use of growth regulators; grades and grading, packaging and containers; federal, state and private inspection agency functions and procedures of inspection. Attention will also be given to production areas and their importance as sources of supplies on the New England markets.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.
MR. SNYDER.

Vegetable Crops S-6. (Marketing Methods) II.

This course includes the handling of produce in its movement through market channels; consumer unit packaging, materials, methods, techniques, equipment; the various market outlets; types of buyers and handlers; methods of sale and the regulations involved; such as, the Perishable Agricultural Agency Act, Uniform Sales Act, Bills of Lading Act, etc.; brands, trademarks and other methods of promotion and advertising; retail sales outlets.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.
MR. SNYDER.

Vegetable Crops S-7. (Commercial Vegetable Culture) I.

Problems and practices of the commercial grower are discussed as they involve seedage, planting, cultivation, irrigation, weed control, tools, machinery, farm organization, and management.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.
MR. MAYNARD.

Vegetable Crops S-8. (Commercial Vegetable Culture) II.

This is a continuation of Vegetable Crops S-7 in which the discussions involve the cultural practices for the various vegetables of commercial importance in the New England area. Organized trips to market gardening areas are required which cover a period of approximately three days and cost about \$30.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.
MR. TUTTLE.

Vegetable Crops S-10. (Marketing Methods) II.

A course in the purchasing of vegetables designed only for students specializing in food management. It includes studies of the more important vegetables, sources of supplies, seasons of availability, grades, containers, and packs on our markets, and the characteristics associated with quality. Market outlets, types of dealers, and business methods of the vegetable trade will be examined.

A field trip to a wholesale market is required. Estimated cost, \$10.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.
MR. TUTTLE.

Vegetable Crops S-12. (Plant Pests and Their Control) II.

This course is designed to give students an understanding of the more common vegetable diseases and garden weeds and the most satisfactory practical methods for controlling these pests.

2 class hours and 2 2-hour laboratory periods a week.

Credit, 2.
MR. TUTTLE.

RELATED SUBJECTS**Agricultural Engineering S-1. (Farm Power) I. and II.**

A study of the principles of the gasoline engine and its accessories as used in trucks, tractors and power units; and the application of electricity to farm operations, with particular emphasis on the selection, care and maintenance of electric motors. Exercises cover trouble shooting and minor repairs to gasoline engines; and the selection of proper wire size, overload protection, and the electrical equipment for farm electric appliances. Laboratory fee \$3.00.

1 Class hour and 2 2-hour laboratory periods a week.

Credit, 1½ or 3.
MR. JOHNSON.

Agricultural Engineering S-3. (Farm Shop) I. and II.

A study of adequate tools in a farm shop which can assist in solving farm construction and maintenance problems. Instruction is given in the care and use of carpenter's tools through exercises in bench work, repair of farm equipment, and building construction, including the mixing and placing of concrete. Exercises covering domestic water systems and the repair of farm machinery give the student experience in arc and gas welding, pipe fitting, soldering, and the use of machinist's tools. While the time is too limited for the student to develop much skill, the capabilities of the equipment can be adequately demonstrated. Laboratory fee \$4.00.

3 2-hour laboratory periods a week.

Credit, 1½ or 3.
MR. PIRA.

Agricultural Engineering S-6. (Dairy Mechanics) II.

Designed for men interested in dairy plants and allied work, this course covers the principles and equipment involved in processing and refrigeration of milk products, together with the instrumentation necessary for process control.

2 class hours and 1 2-hour laboratory period a week

Credit, 3.
MR. PERRY.

Agricultural Engineering S-7. (Farm Structures) I.

A study of principles of design of farm buildings, utilizing elementary structural mechanics and the characteristics of building materials. Experience in developing construction details results from the complete planning of a major farm building by the individual student.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.
MR. COLLINS.

Agricultural Engineering S-9.**(Farm Structures and Drainage) I. and II.**

A study of building materials, details of construction, simple structural mechanics, and the principles of design applied to farm buildings. Each student will design in detail one of the major farm buildings in which he is particularly interested.

About one-fourth of the time is given to the study of land drainage practice and the use of the engineer's level in laying out drainage systems.

2 class hours and 2 2-hour laboratory periods a week.

Credit, 4.
MR. COLLINS.

Agricultural Engineering S-11. (Grounds Equipment) I and II.

First half—a study of 2 cycle and 4 cycle engines and their applications; servicing, trouble shooting, and minor repairs. Second half—specialized machinery such as mowers, tillers, aerators, etc.; design as it relates to maintenance and operation; practical skills in sharpening, adjusting and general conditioning. Laboratory fee \$3.00.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.
MR. WHITNEY

Agricultural Engineering S-12. (Food Handling Equipment) II.

This course deals with basic principles of electricity including units, terms and their relationships; distribution, wiring, fusing, materials and system planning. Also principles of motors, lighting, water supply and waste disposal. Laboratory fee \$3.00.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 1½ or 3.
MR. PIRA.

Agricultural Engineering S-13.**(Refrigeration, Heating and Air Conditioning) I.**

This course deals first with basic principles of refrigeration, air flow and temperature and humidity relationships. Principles will be applied to selecting

equipment and planning systems for refrigeration, ventilation, heating and air conditioning.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.
MR. PIRA.

Agricultural Engineering S-14. (Repair of Farm Equipment) II.

Instruction in the capabilities of arc and gas welding, soldering, pipe fitting, and machinists' tools in the repair and construction of farm machinery and miscellaneous farm equipment. Exercises cover the repair of machines. Laboratory fee \$4.00.

3 2-hour laboratory periods a week.

Credit, 1½
MR. WHITNEY.

Agricultural Engineering S-16. (Irrigation and Soil Conservation) II.

The principles of design for irrigation systems and soil conservation practices applicable to the management of large turf areas.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.
MR. JOHNSON.

Agricultural Engineering S-18.

(Food Service Space and Equipment Organization) II.

A study of problems of planning, equipping and operating a commercial kitchen. Designs and floor plans for efficient operation and use of space; equipment selection, installation, management and maintenance; electric, water, waste disposal, refrigeration and heating systems.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.
MR. JOHNSON.

Agronomy S-1. (Soil Management) I.

Every agricultural interest is vitally concerned with the soil, its adaptations and its management for plant production. This course treats of the selection of suitable soils for the special purpose of agriculture, horticulture and floriculture.

Laboratory includes training in the use and interpretation of the maps of the U. S. Soil Survey and in tests of soil texture, organic matter and soil acidity. Practical field work will be given in judging the crop adaptation and value of soils.

As a field project the student will be required to make a study of some farm, nursery or florist's plant, from the standpoint of soil conditions and methods of soil management in relation to the enterprise as a whole. Laboratory fee \$2.00

2 class hours and 1 3-hour laboratory period a week.

Credit, 3.
MR. ZAK, MR. MICHELSON,
MR. WADDINGTON.

Agronomy S-2. (Fertilizers) II.

The origin, manufacture, purchase and use of commercial fertilizer materials. A study will be made of the interpretation of fertilizer formula, analysis and guarantee. Special attention will be given to the newer concentrated fertilizer

materials and to those produced from atmospheric nitrogen. The laboratory work will give practice in the identification of fertilizer materials, in the calculation of fertilizer formulas, and in the preparation of fertilizer mixtures.

2 class hours and 1 2-hour laboratory period a week.

Credit, 1½

MR. ZAK, MR. MICHELSON,
MR. WADDINGTON.

Agronomy S-4. (Field Crops) II.

The lecture hours of this course will be devoted to presentation of the most successful methods of fertilizing, cultivating, harvesting, and storing the field crops grown in New England. Special attention will be given to the choice of the best adapted varieties for the production of hay, pasture, corn, potatoes, and root crops.

The laboratory work will include the study of corn and potato varieties, identification of grass and weed species, and studies of purity and germination. Field observations of growing crops will be included as the season permits.

3 class hours and 1 2-hour laboratory period a week.

Credit, 4.

MR. SOUTHWICK.

Bacteriology S-1. (Bacteriology and Rural Hygiene) I.

Basic fundamentals of microbiology and the problems of applied bacteriology in health, agriculture, and industry. Milk, water supply, sewage disposal, and food production are considered.

3 class hours a week.

Credit, 3.

MR. HIMMELFARB.

Bacteriology S-3. (Food Sanitation) I.

An introduction to basic bacteriological techniques, such as, use of the light microscope, staining methods, estimating bacterial density in water, milk, meats. Lectures, films, and reading assignments are integrated with the laboratory assignments to give the student a basic understanding of the morphological and cultural characteristics of bacteria. The cultural characteristics are related to sound practices of food sanitation.

3 class hours a week.

Credit, 3.

MR. WISNIESKI.

Bacteriology S-4. (Dairy Bacteriology) II.

Various bacteriological tests for the estimation of the numbers and types of organisms in milk are studied. Special attention is given to basic laboratory procedures, the techniques advocated by standard methods, and their applications in the dairy field.

2 class hours and 2 3-hour laboratory periods a week.

Credit, 5.

Botany S-1. (Introductory Botany) I.

Structure, function and reproduction of plants with primary emphasis on the flowering plants. Students in the Stockbridge School are enrolled in the regular

Introductory Botany course in the University and meet in special laboratory sections of that course.

2 class hours and 1 3-hour laboratory period a week.

Credit, 3.
MR. PUTALA.

English S-1. (Business English) I. and II.

Training and practice in writing various types of letters and reports with some review work in fundamentals of grammar and composition.

3 class hours a week.

Credit, 3.
MRS. DUBOIS.

English S-3. (Report Writing) I.

A discussion and writing course concerned with planning and setting up different kinds of reports and articles.

3 class hours a week.

Credit, 3.
MRS. DUBOIS.

Entomology S-2. (Insect and Related Pests of Florists' Crops) II.

Course material provides a comprehensive study of insect pests of greenhouse and garden plants primarily for floriculture majors. It is devoted to an understanding of the nature of the pests encountered; types of damage, life histories, associations with environment, and the more important aspects of their control. Laboratory fee \$2.00

3 class hours and 1 2-hour laboratory period a week.

Credit, 2.
MR. WHEELER.

Entomology S-3. (Structural Pests) I.

A course for majors in dairy technology, food distribution, food management, and others, designed to acquaint students with the common structural pests (household, stored food, etc.) and how to prevent and eradicate them. Laboratory fee \$2.00.

1 class hour and 1 2-hour laboratory period a week.

Credit, 2.
MR. SWEETMAN.

Entomology S-4. (Insect and Related Pests of Fruit, Shade and Ornamental Trees and Shrubs) II.

Course material, for freshmen in landscape operations, arboriculture, and pomology, is devoted to an introduction to entomology and a study of major pest species; their recognition, and development. The course is basic to a further study of pests and their control for those who will take Entomology S-5. A summer collection of important pests may be required. Laboratory fee \$2.00.

2 class hours and 1 2-hour laboratory period a week.

Credit, 1½.
MR. WHEELER.

Entomology S-5. (Control of Insect and Related Pests of Fruit, Shade and Ornamental Trees and Shrubs) I.

Seniors in horticulture and arboriculture who have completed Entomology S-4, go on to a more detailed study of important pests; their damage, life his-

ories, environment, and distribution and to an understanding of the principles and practical methods of controlling those pests. Laboratory fee \$2.00.

1 class hour and 2 2-hour laboratory periods a week.

Credit, 3.

MR. WHEELER.

Entomology S-6. (Turf Insects) II.

A course designed to acquaint the student with the principal pests of turf. General introduction to entomology, followed by study of specific pests of turf.

1 class hour and 1 2-hour laboratory period a week.

Credit, 1.

MR. HANSON.

Entomology S-10. (Forest Insects) II.

First eight weeks are in conjunction with Entomology S-4. This part of the course is an introduction to Entomology and a survey of major pest species. The balance of the semester is devoted to the more important forest insects, including their identification, biology and control. Laboratory fee \$2.00.

2 class hours and 1 2-hour laboratory period a week.

Credit, 3.

MR. WHEELER.

Entomology S-12. (Livestock and Forage Crop Insects) II.

The recognition, biology and control of important insect and related pests affecting livestock and forage crops. Studies of specific pests and controls, including the proper use of chemicals, follow a brief consideration of some fundamentals of entomology. For last half of semester. Laboratory fee \$2.00.

3 class hours and 1 2-hour laboratory period a week.

Credit, 2.

MR. WHEELER.

Food Technology S-2. (Fundamentals of Food Preservation) II.

A survey is made of the causes of food spoilage and the methods used in preserving foods. Sources, preservation and marketing of the major food groups is discussed.

2 class hours and 1 2-hour laboratory period a week.

Credit, 1½ or 3.

MR. HAYES.

Food Technology S-3. (Special Products) I.

The class and laboratory exercises in this course are planned to meet the needs of students majoring in dairy technology. General principles of food preservation and their application to the subject of dairying are discussed in class exercises. Crushed fruits, fruit juices, syrups, flavored syrups and other products which are utilized in the dairy trade are manufactured and tested.

1 class hour and 1 2-hour laboratory period a week.

Credit, 2.

MR. LEVINE.

Home Economics S-1. (Basic Food Principles) I.

A study and application of basic scientific principles of food preparation techniques.

2 class hours and 1 3-hour laboratory period a week.

Credit, 3.

MRS. McCULLOUGH.

Mathematics S-1. (General Course) I.

This course provides a thorough drill in those fundamentals which are used in practical arithmetic. Fractions, ratio and proportion, percentage, formulas of area and volume, graphs, logarithms, and the use of the slide rule will be studied.

2 class hours a week.

Credit, 2.

THE DEPARTMENT.

Mathematics S-3. (Review Mathematics) I.

The simple mathematics used in vocational forestry: arithmetic, plane geometry, certain trigonometric functions, use of the slide rule.

3 class hours a week.

Credit, 3.

THE DEPARTMENT.

Home Economics S-2. (Elementary Nutrition) II.

A general survey of the fundamental principles on which the normal person may plan an adequate dietary. It includes a study of the nutritive value of foods so as to make wise selection possible.

3 class hours a week.

Credit, 1½.

MRS. COOK.

Plant Pathology S-2. (Plant Diseases) II.

A survey course dealing with the nature, cause, and general procedures of plant disease control. The profound influence environment exerts on plant disease, the role played by insects in their transmission and the major classes of plant pathogens, fungi, viruses and bacteria are briefly considered.

3 class hours a week.

Credit, 1½.

MR. BANFIELD.

Practical Science S-7 and S-8. I. and II.

A two semester course in the theory and application of the sciences, chiefly chemistry (first semester) and physics (second semester). The course is designed to give an introduction to scientific thought and phenomena by lectures, demonstrations, assigned readings and problems. Practical applications and problems are stressed.

2 class hours a week.

Credit, 1 or 2.

MR. HUNTING.

Speech S-1 and S-2. I. and II.

Theory and practice in expository speaking for business and professional purposes.

1 class hour a week.

Credit, ½ or 1

THE DEPARTMENT.

Veterinary Science S-1. I.

For Animal Science majors. Conservation of the health of animals is the keystone of successful animal husbandry. This course acquaints students with the

causes, development, control, eradication, and prevention of diseases common to cattle, sheep, swine, and horses.

3 class hours a week.

Credit, 3.

MR. SMITH.

Veterinary Science S-1 and S-2. I. and II.

For Poultry Science majors. Students in the first semester will be concerned with the anatomy and physiology of poultry, and hygienic measures applicable to poultry management.

The second semester will cover the causes, development, control, eradication, and prevention of diseases of economic importance to the poultry industry.

3 class hours a week.

Credit, 3.

MR. SEVOIAN.

SHORT COURSES AT THE UNIVERSITY OF MASSACHUSETTS

Short courses are based on the idea that the motive which inspires study is the most significant factor in study itself, and that this motive rises when the student himself realizes he faces a problem that calls for a solution. Therefore there is no age limit. Enrolled in short courses are the young and the old, the experienced and the inexperienced, the theoretical and the practical. In this grouping there is a value, since students learn from each other as well as from the instructors. Practically all Short Course students intend to make a direct application of the knowledge given. Hence the aim of Short Course work is to offer the largest amount of information and training in agricultural and horticultural lines in the shortest possible time. During the past thirty years Short Courses have served thousands of students in this Commonwealth, and the demand for these courses since the war has increased greatly due to both veteran and non-veteran demand.

DIRECTORY OF INFORMATION

A. The University

Those desiring University catalogs and other pamphlets giving full information relative to entrance requirements, courses of study, expenses, opportunities for student labor, and so forth, and those with questions regarding admission to the university, either to the freshman class or to advanced standing, should address Marshall O. Lanphear, Registrar of the University of Massachusetts, Amherst, Mass.

B. The Graduate School

Questions relating to courses offered leading to the degrees of Master of Science and Doctor of Philosophy, admission and work required, should be addressed to Director of the Graduate School, University of Massachusetts, Amherst, Mass.

C. Short Courses

For information concerning the Short Course Units, write or apply to Fred P. Jeffrey, Director of Stockbridge School of Agriculture, University of Massachusetts, Amherst, Mass.

Please forward with your application the following: (1) a letter of recommendation from your Guidance Director; (2) a letter written in long hand giving your reasons for wanting to attend Stockbridge; (3) a transcript of your high school or preparatory school grades; and (4) the certificate of citizenship form to be found on the next page, if lower Massachusetts tuition rate is claimed.

FORM I

**APPLICATION FOR ENROLLMENT
IN THE
STOCKBRIDGE SCHOOL OF AGRICULTURE**

(Type or Print Information)

Name Date

City or
Town Street State

Present Occupation Age

School or College Attended:

Name of School Year Graduated

City or

Town Are you a Veteran trainee?

Indicate by a check mark the course in which you desire to register. Do not check more than one.

1. Animal Science

7. Forestry

2. Arboriculture

Vocational:.....

Wood Products:.....

3. Dairy Technology

8. Fruit Growing

4. Floriculture

9. Landscape Operations

5. Food Distribution

10. Poultry Science

6. Food Management

11. Turf Management

12. Vegetable Crops

References:—I am personally acquainted with the above applicant, and know.....
to be of good moral character, industrious, studious, and physically capable.

1. Name Position

Address

2. Name Position

Address

(Two references are required and should not be members of your own family).
Mail this blank to FRED P. JEFFREY, Director of the Stockbridge School of Agriculture.

UNIVERSITY OF MASSACHUSETTS, AMHERST, MASS.

Important.—Be sure to file citizenship certificate if State tuition rate is claimed.

The University of Massachusetts charges a tuition fee of \$300 a semester to students who are not residents of Massachusetts. In order to satisfy the University authorities that an applicant is entitled to state tuition of \$100 a semester, they require a statement signed by the clerk of the city or town in which the applicant resides, certifying to the fact that the parent or guardian of the applicant is a legal resident of said city or town. Where the guardian is certifying to this statement, it will be necessary for him to furnish copies of his appointment by the court. Such a statement may be made on the form below. If this is not presented when the student registers, the Treasurer has no option but to collect tuition on the above basis. When requesting the City Clerk to sign this certificate, an applicant for admission to the University should give the name and address of the parent or legal guardian unless he himself is of legal age.

FORM II

CERTIFICATE OF CITIZENSHIP

This is to certify that I am the father..... mother.....
 legal guardian..... of
Student's Name

Signed.....

This is to certify that on the date specified below (Insert name of parent or guardian)
 is a legal resident of
Parent's Name
, Massachusetts.
Town or City

Signed.....
Town or City Clerk

Date

Mail this blank to FRED P. JEFFREY, Director of the Stockbridge School of Agriculture,

UNIVERSITY OF MASSACHUSETTS, AMHERST, MASS.

This certificate must be filed with application blank if lower tuition rate for citizens of Massachusetts is to be secured.

UNIVERSITY OF MASSACHUSETTS

TUITION EXPENSES

As a state institution, the University of Massachusetts offers a low rate of tuition to all students entering from the Commonwealth. Eligibility for admission under the low residential rate is determined in accordance with the following policy established by the Board of Trustees.

1. A student must present evidence satisfactory to the treasurer of the University that his domicile is in the Commonwealth of Massachusetts in order to be considered eligible to register in the University as a resident student. This means that he must have established a bona fide residence in the Commonwealth with the intention of continuing to maintain it as such.

2. The domicile of a minor shall follow that of the parents unless such minor has been emancipated. In case of emancipation, the student in addition to the requirements of these regulations respecting residence shall present satisfactory proof respecting emancipation. Minors under guardianship shall be required to present in addition to the certification of the domicile of the guardian, satisfactory documentary evidence of the appointment of the guardian.

3. No student shall be considered to have gained residence by reason of his attendance in the University nor shall a student lose residential preference during his continuous attendance at the University.

4. The residence of a wife shall follow that of the husband.

5. The prescribed form of application for classification as to residence status must be executed by each student. Misrepresentation of facts in order to evade the payment of out-of-state tuition shall be considered sufficient cause for suspension or permanent exclusion from the University.

6. Discretion to adjust individual cases within the spirit of these rules is lodged with the President of the University.

SUPPLEMENT

IMPORTANT NOTICE OF CHANGE IN COURSES

Beginning in September 1962, the following changes will take effect:

- (1) The Program of Study in Wood Products will continue as outlined in the Stockbridge Catalogue.
- (2) The Program of Study in Arboriculture will be expanded to take care of those who formerly selected Vocational Forestry. This program is entitled **ARBORICULTURE AND PARK MANAGEMENT**, and a description follows:

ARBORICULTURE AND PARK MANAGEMENT

Associate Professor King

Students electing Arboriculture and Park Management will follow a common curriculum during the first year but will have a choice of two programs during the second year. The student may select his option upon admission and must do so prior to the start of the second year.

Regardless of option the freshman majoring in Arboriculture and Park Management must attend a one week intensive training course in the use of ropes, climbing, and safety practice. This course is scheduled during the week before school starts. **Participating**, not passing, is required for the Park Management Option.

Arboriculture Option

For description see catalogue. Enrollment is limited to 25 freshmen each year.

Park Management Option

The student will be prepared for various aspects of park recreation, general forest management, and wildlife conservation. Park formation and expansion to meet public needs is a growing field and there is need for trained men. Many phases of Park Management and Arboriculture are not only related but interchangeable. Enrollment is limited to 25 freshmen each year.

ARBORICULTURE AND PARK MANAGEMENT

FIRST YEAR

First Semester

Agronomy S-1 (Soil Management)

Arboriculture S-0 (Tree Climbing - Special Qualifying Course)

Arboriculture S-1 (Practices and Policies)

¹Botany S-1 (Introductory Botany)

²English S-1 (Business English)

Landscape Operations S-1 (Tree Identification)

Mathematics S-3 (Review Mathematics)

¹One-half of class takes Botany at this time - Other one-half during spring of senior year.

²Section not taking Botany.

Second Semester

Agricultural Engineering S-11 (Grounds Equipment)

Agrostology S-5 (Basic Factors, Construction and Maintenance of Fine Turf Areas)

Arboriculture S-2 (Practices and Policies)

Entomology S-4 (Forest and Shade Tree Insects)

Floriculture S-12 (Plant Propagation)

Speech S-2 (Public Speaking)

Arboriculture Option

SECOND YEAR

First Semester

Agricultural Economics S-4 (Elements of Bookkeeping)
Arboriculture S-3 (Diagnosis and Control)
Arboriculture S-7 (Shade Tree Surveys and Costs)
Entomology S-5 (Control of Insect and Related Pests of Shade and Ornamental Trees and Shrubs)
Practical Science S-7 (Primarily Chemistry)
Recreation S-3 (Introduction to Recreation)

SECOND YEAR

Second Semester

Agricultural Engineering (Surveying - Second half of semester)
Arboriculture S-8 (Shade Tree Surveys and Cost Estimates)

¹Botany S-1 (Introductory Botany)

²English S-1 (Business English)

Forestry S-3 (Management of Small Woodlands)
Fruit Growing S-2 (Orchard Pruning - First half of semester)
Landscape Operations S-8 (Topography and Construction)
Landscape Operations S-12 (Shrub Identification)
Recreation (Park Management)

¹Botany for the section not having had Botany.

²English for the section not having had English.

Park Management Option

SECOND YEAR

First Semester

Agricultural Economics S-4 (Elements of Bookkeeping)

Arboriculture S-3 (Diagnosis and Control)

Arboriculture S-7 (Shade Tree Surveys and Costs)

Entomology S-5 (Control of Insect and Related Pests of Shade and
Ornamental Trees and Shrubs)

Forestry S-1 (Forest Measurements)

Wildlife Management S-1

Recreation (Introduction to Recreation)

SECOND YEAR

Second Semester

Agricultural Engineering (Surveying – Second half of semester)

Agricultural Engineering S-7 (Structures)

Arboriculture S-8 (Shade Tree Surveys and Cost Estimates)

¹Botany S-1 (Introductory Botany)

²English S-1 (Business English)

Forestry S-2 (Applied Silviculture)

Fruit Growing S-2 (Orchard Pruning – First half of semester)

Landscape Operations S-12 (Shrub Identification)

Recreation (Park Management)

¹Botany for the section not having had Botany.

²English for the section not having had English.



Other University of Massachusetts Catalogues:

- **Undergraduate Catalogue**
- **General Information Bulletin**
- **Graduate School Catalogue**
- **Summer School Catalogue**









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